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Master's Dissertation

Trabajo Fin de Máster

**STUDENT-CENTRED
METHODOLOGIES (SCM) TO
TEACH AND LEARN
THEORETICAL CONTENT IN
BILINGUAL PHYSICAL
EDUCATION (PE) LESSONS**

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TABLE OF CONTENTS

ABSTRACT AND KEY WORDS

RESUMEN Y PALABRAS CLAVE

1. INTRODUCTION	1
1.1. Justification and problem formulation	1
1.2. Research questions and objectives.....	2
1.2.1. Research questions.....	2
1.2.2. Objectives	3
1.3. Possible contribution and personal expectations	3
1.4. Structure of the dissertation	4
2. THEORETICAL FRAMEWORK AND LITERATURE REVIEW	5
2.1. Key concepts	5
2.2. Review of the existing literature.....	6
2.2.1. Student-centred methodologies (SCM).....	6
2.2.2. The CLIL methodological approach	6
2.2.3. SCM and CLIL in bilingual PE	9
2.2.4. Flipped Classroom techniques	12
3. RESEARCH METHODOLOGY	15
3.1. Type of research study	15
3.2. Sample and characteristics of the groups	15
3.3. General timetable and timing.....	17
4. DATA COLLECTION AND ANALYSIS	18
4.1. Procedures for data collection	18
4.2. Techniques for data analysis.....	20
5. PRACTICAL PROPOSAL	22
5.1. Educational intervention programme in the classroom.....	22
5.2. Curricular aspects	23
5.3. Classroom methodologies	26

5.4. Catering for diversity	26
5.5. Contents, sessions and tasks.....	27
5.5.1. Session 1	28
5.5.2. Sessions 2, 3 and 4	28
5.5.3. Session 5	29
5.6. Resources.....	30
5.7. Assessment moments, procedures and instruments	30
6. RESULTS AND DATA ANALYSIS	33
6.1. Results in terms of PE-in-CLIL content and language	33
6.1.1. Control group (traditional methodology).....	33
6.1.2. Experimental group (SCM).....	34
6.1.3. Differences between the two groups.....	35
6.2. Results in terms of students' perception of the applied CLIL methodology	38
6.2.1. Satisfaction. Questions 1 and 2.....	38
6.2.2. Boredom. Questions 3 and 4.....	40
6.2.3. Motivation. Questions 5 and 6.....	42
6.2.4. Confidence. Question 7	44
6.2.5. Quality. Question 8	45
6.2.6. Cooperation. Questions 9 and 10	46
6.2.7. Communication. Questions 11 and 12	48
6.2.8. Mastery of learning. Question 13	50
6.2.9. Pacing. Question 14	52
6.2.10. Time used. Question 15	53
6.2.11. Use of ICTs. Questions 16 and 17	53
6.2.12. Open-ended questions. Questions 18, 19 and 20.....	55
7. CONCLUSIONS.....	57
7.1. A sort of rounding-off	57
7.2. Main findings.....	57
7.3. My contribution.....	59

7.4. Limitations	60
7.5. Lines for further research	61
8. <i>BIBLIOGRAPHICAL REFERENCES</i>	62
9. <i>APPENDICES</i>	66
9.1. Appendix 1. Assessment tests	66
9.2. Appendix 2. Subjective perception survey	66
9.3. Appendix 3. <i>Edpuzzle</i> learning-teaching platform	66
9.4. Appendix 4. Mini-tasks for the Experimental Group (EG)	67
9.5. Appendix 5. Final task for the Experimental Group (EG)	68
9.6. Appendix 6. Worksheets for the Control Group (CG)	69

ABSTRACT AND KEY WORDS

Abstract: Nowadays, the subject of Physical Education (PE) is often eminently practical, while the more theoretical educational content tends to be displaced and even forgotten. This content cannot be ignored and must form an effective part of the teaching-learning process. Therefore, the aim of this Master's Dissertation was to investigate the scientific literature in search of an effective, innovative, and attractive methodology (especially the Student-Centred Methodology, hereinafter referred to as SCM), to teach and learn theoretical contents of PE in the CLIL context. Once the methodology was selected, a didactic proposal was elaborated and carried out with students in the PE classroom comparing two groups: a control group where a traditional methodology was applied, and an experimental group using a SCM (*Flipped Classroom* techniques). Two main variables were analysed and compared: results in terms of Content and Language Integrated Learning (CLIL), and results in terms of students' subjective perception of the methodology applied. The main results indicate some significant differences between the two groups. The SCM proved to be more effective than the traditional one in terms of content and language learning, as well as in some variables of the learners' subjective perception (motivation, cooperation, communication, and mastery of learning). Therefore, it can be determined that an SCM such as the *Flipped Classroom* is a good option for teaching and learning bilingual PE theoretical content in a CLIL context.

Key words: Theoretical content, Physical Education, Student-Centred Methodology, *Flipped Classroom*, CLIL.

RESUMEN Y PALABRAS CLAVE

Resumen: En la actualidad, la materia de Educación Física (EF) suele ser eminentemente práctica, mientras que los contenidos educativos más teóricos tienden a ser desplazados e incluso olvidados. Estos contenidos no pueden ser obviados y tienen que formar parte del proceso de enseñanza-aprendizaje de una manera eficaz. Por tanto, el objetivo de este Trabajo Fin de Máster fue indagar en la literatura científica en busca de una metodología eficaz, innovadora, y atractiva (sobre todo la Metodología Centrada en el Estudiante, en adelante MCE), para enseñar y aprender contenidos teóricos de la EF en el contexto AICLE. Una vez seleccionada/s la/s metodología/s, se elaboró y llevó a cabo una propuesta didáctica con alumnos en el aula de EF comparando entre dos grupos: un grupo de control donde se aplicó una metodología tradicional, y un grupo experimental empleando una MCE (técnicas *Flipped Classroom*). Se analizaron y compararon dos variables principales: resultados en cuanto al Aprendizaje Integrado de Contenidos y Lengua Extranjera (AICLE), y resultados en cuanto a la percepción subjetiva del alumnado sobre la metodología aplicada. Los principales resultados indican algunas diferencias significativas entre ambos grupos. La MCE resultó ser más eficaz que la tradicional en cuanto al aprendizaje de contenidos y lengua extranjera, así como en algunas variables de la percepción subjetiva del alumnado (motivación, cooperación, comunicación y dominio del aprendizaje). Por tanto, se puede determinar que una MCE como lo es *Flipped Classroom* es una buena opción a la hora de enseñar y aprender contenidos teóricos de la EF bilingüe en un contexto AICLE.

Palabras clave: Contenidos teóricos, Educación Física, Metodología Centrada en el Estudiante, *Flipped Classroom*, AICLE.

1. INTRODUCTION

1.1. Justification and problem formulation

Traditionally, Physical Education (PE henceforth) has been eminently practical, and the theoretical contents have been displaced. However, students must learn numerous concepts that are contextualised and applicable to their real life, related to *health, physical condition, sports, body expression and activities in nature*. These contents are perfectly interdisciplinary between different subjects (Biology, Science, Geography, Technology...). Due to the essentially practical characteristics of PE and the very conception that students have of it, in my daily practice I encounter a problem in teaching the theoretical contents of bilingual PE in an effective way, not being sure that students acquire a meaningful and complete knowledge of all the content blocks.

I am sure (from my own experiences both as a student and as a teacher) that old methodologies based on narrated presentation of content do not work in PE. In addition, it is advisable not to spend PE class time on teaching theoretical content unless it is in a practical and dynamic way, so as not to lose motor engagement time. Sedentary lifestyles are becoming an increasingly common problem, and there are students who only do physical activity during PE lessons (and they are only 2 hours per week...).

In order for learning to be meaningful and motivating, the use of new types of methodologies is fundamental. For these reasons, a good alternative to the traditional expository theoretical sessions in PE can be the use of new student-centred active methodologies. How to apply them in the bilingual PE class is something interesting to know, especially with the aim of students acquiring theoretical concepts about bilingual PE. Times are changing and with them the methodologies must be renewed. It should be taken into account that students use ICT regularly, and this can be a great advantage to use it as a didactic resource to learn theoretical contents.

The aim of this work is to analyse the existing scientific literature on student-centred methodologies applied to bilingual PE and to the teaching-learning of theoretical contents, and considering the information extracted, to carry out a real didactic proposal applied to the bilingual PE classroom.

Therefore, I consider it a viable and feasible research work to be carried out in the real classroom practice, with a group of students of Compulsory Secondary Education, and compare between a control group and an experimental group.

1.2. Research questions and objectives

1.2.1. Research questions

The research questions that emerge are:

- What types of student-centred methodologies exist for PE? And for bilingual PE? What about for teaching theoretical content in bilingual PE?

We will analyse the literature in search of methodologies applicable to PE in the CLIL context, as well as apply what we have learnt during the master's degree. In addition, specific research will be carried out on the teaching-learning of theoretical content and the most effective methods of teaching it.

- Which one is better? Which is the most effective to teach-learn theoretical content in PE?

Once extracted, we must determine which is most effective in order to be able to implement it in the classroom with the students and see if it is really effective in our context.

- What are the differences between them and traditional ones?

It is also interesting to compare student-centred methods with other traditional methods. For example, we can compare their impact on learners' acquisition of content and language, or even check learners' satisfaction and perceptions of that particular methodology.

- How can they be well implemented in a didactic proposal with pupils in a school?

Not all methodologies are perfectly applicable; it will depend on the context, and determining which methodology is most suitable for implementation will be essential in this work.

- What effects will the didactic application have on what students learn? Will it be effective?

As I said above, obtaining results will be key to be able to conclude with real and practical evidence. For example, in terms of learning acquisition, or even in terms of student satisfaction.

1.2.2. Objectives

On the other hand, the main objective of my research work is the following:

- To prepare and carry out a didactic proposal in PE through a student-centred methodology.

First, by analysing the literature in search of an appropriate methodology. Secondly, by carrying it out in a public secondary school. Third, by obtaining some results. Fourth, by comparing between a control group and an experimental group. And fifth and lastly, by drawing up real and practical conclusions.

In relation to this, the specific objectives that I can extract are:

- To analyse the scientific literature on student-centred methodologies in the bilingual PE classroom.
- To determine which methodologies are most effective to teach and learn theoretical content for the bilingual PE.
- To carry out a practical proposal (Didactic Unit) and implement it with a group of students in the PE classroom.

1.3. Possible contribution and personal expectations

First of all, I intend to find an answer to the initial problem: how to teach theoretical content in PE in an effective and motivating way, in order to improve content and

language learning in a CLIL context. And if the results obtained are valid and reliable, I believe that I would be contributing something positive to the field of bilingual PE and CLIL in the PE classroom, as well as to the problem of teaching theoretical content in this subject.

The ultimate goal of this research is to determine a successful methodology that promotes the acquisition of specific contents of PE in a meaningful and motivating way in students, so it could be useful for other teachers to know how to act in PE sessions.

In general terms, I hope to provide an answer to the initial problem in terms of what I have said above. I also hope to carry out a different didactic proposal, which is innovative, useful and applicable to the reality of my students. What I want most of all is that they like it and that they learn useful contents in a motivating way. I do not want them to get bored as it happens when I teach normal theory. In addition, I intend to analyse the literature in search of methodologies that will contribute to my ongoing training and make me a better teacher, so that my teaching method improves and is reflected in my students' learning. Furthermore, I would like it to be useful for other students, teachers, researchers, writers and, of course, educational authorities.

1.4. Structure of the dissertation

My main idea is to carry out a hybrid Master's Thesis:

- On the one hand, to carry out a literature review and/or theoretical research on the selected topic. For example, a review of different student-centred methodologies for bilingual PE, or for other subjects which can be extrapolated to my subject. In this way, I would like to analyse different teaching-learning methods and conclude which may be more effective for teaching theoretical content.
- On the other hand, a subsequent practical and didactic application to the bilingual PE classroom. For example, once the different methodologies have been analysed, to design and implement an Integrated Lesson Plan applying one or more of them. Afterwards, to analyse whether the application has been effective in the learning of the theoretical contents of PE.

2. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1. Key concepts

Below I will define several key concepts to understand the research:

- *Bilingual PE and CLIL (PE-in-CLIL)*: A holistic approach that uses the principles of learning-by-doing and learner motivation through movement to teach motor content through a foreign language, as well as promoting cognition, citizenship, and providing linguistic support to achieve motor and linguistic goals (Coral & Lleixà, 2016, p. 108).
- *Theoretical content*: A set of knowledge, skills, abilities and attitudes (MECD, 2014). Theoretical contents will be those which are obtained analytically after reading or listening to an explanation, without putting it into practice (e.g., concepts, laws, principles...). It is these that provide the theoretical knowledge and initial foundations for learners which, combined with the practical ones, contribute to the acquisition of competences and the achievement of the objectives of PE.
- *Student-centred methodologies in PE-in-CLIL*: A set of strategies, procedures and actions organised and planned by the teaching staff to enable meaningful, active and competent student learning (MECD, 2014). In student-centred approaches, the student manages the teaching-learning process and becomes an active part of the construction of knowledge (Zapatero Ayuso, 2017, pp. 238–239).
- *Flipped classroom techniques*: An active and student-centred approach that was formed to increase the quality of the period in class, in such a way that students receive the lesson at home through educational videos, and when they come to class the exposure time is dedicated to review and/or other more practical tasks (Ozdamli & Asiksoy, 2016, p. 99).

2.2. Review of the existing literature

2.2.1. Student-centred methodologies (SCM)

Nowadays, the use of student-centred methodologies (SCM henceforth) and styles is still less common than the use of methods that favour teacher control, which is detrimental to learner autonomy and decision-making. This may be because the teacher feels more comfortable when he/she is in full control, as it all depends on the attitude of the student (Zapatero Ayuso, 2017, p. 247). However, the application of an active competence methodology can lead to greater student satisfaction with the subject (Hortigüela, Pérez-Pueyo, & Fernández-Río, 2017, p. 276), even showing a greater predisposition to regular physical activity (Zapatero Ayuso, 2017, p. 246), which is essential to combat sedentary lifestyles in these times.

Undoubtedly, there is growing evidence that student-centred education has enormous potential:

Decrease in drop-out rates, increase in percentage of students accepted into college, increase in growth in mathematics grade level indicators and state assessments, increase in growth in reading grade level indicators and state assessments, increase in student engagement, decrease in student referrals, and increase in student agency (Glowa & Goodell, 2016, p. 2).

Following on from this, in terms of the principles of student-centred learning-teaching, four stand out: *1. Learning is Personalized; 2. Learning is Competency-based; 3. Learning Happens Anytime, Anywhere; 4. Students Take Ownership Over Their Learning* (Glowa & Goodell, 2016, p. 4). These principles will have to be taken into account by teachers in their daily teaching programmes if they are to move towards a student-centred approach.

2.2.2. The CLIL methodological approach

2.2.2.1. What is CLIL?

CLIL stands for Content and Language Integrated Learning, whereas in Spanish it will be called *AICLE: Aprendizaje Integrado de Contenidos y Lenguas Extranjeras*. From these acronyms we can determine a definition: “a dual educational approach in

which an additional language is used for learning and teaching both content and language” (Marsh, 2000, p. 6).

Therefore, under this approach, not only the learning of the specific content of the subject will be decisive, but also a key element for an integrated education and the global formation of the pupil: the learning of the language.

These two elements are combined in an integrated way in the educational context, with the sole objective of enhancing students' learning, something that years ago had been fragmented within the curriculum. In practical terms, the teaching of the subject in question uses part of the time to increase meaningful exposure to the foreign language. But all this in a natural way (Marsh, 2000, p. 6).

2.2.2.2. CLIL methodology

In the scientific literature there are many readings on CLIL and its methodology in the classroom. But perhaps the most relevant author in this field has been Professor Do Coyle and other researchers such as Hood and Marsh. Their works explain “how” to implement the CLIL methodology appropriately: planned pedagogical integration of contextualised content, cognition, communication and culture in teaching and learning practice (Coyle, Hood, & Marsh, 2010, p. 6).

In relation to CLIL methodology, Coyle (2007, p. 551) sets out the 4 C's framework from a holistic perspective to provide a basis for bringing together the different facets of CLIL in order to support the development of CLIL pedagogies: *content* (subject matter), *communication* (language learning and use), *cognition* (learning and thinking processes) and *culture* (intercultural understanding and global citizenship). You can see a graphical example in Figure 1.

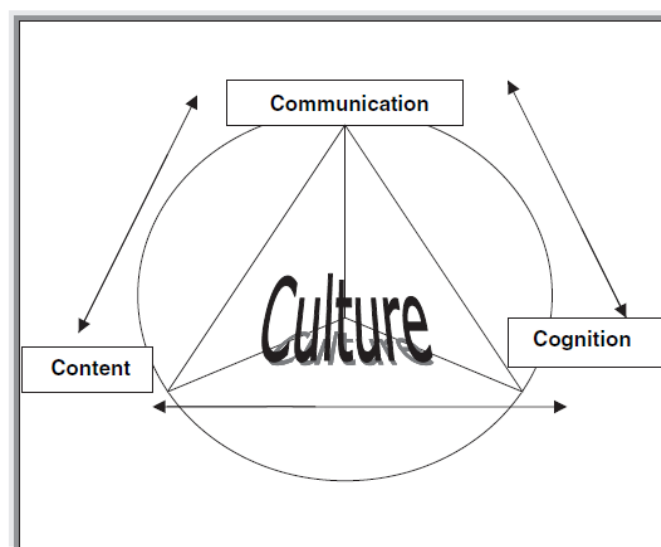


Figure 1. The 4Cs Framework for CLIL (Coyle, 2007, p. 551).

As far as PE is concerned, CLIL fits into this subject as it fits into other subjects in the curriculum such as Biology, Geography, Mathematics, etc. Learning PE content in an integrated way together with the foreign language is an excellent way of dealing with the subject in the educational context.

In PE these four points (4C's) can be used to improve the critical aspect of the teaching-learning process (Fazio, Isidori, & Bartoll, 2015, p. 922):

- *Content* refers to the selection and handling of subject content, which in the Spanish PE curriculum is summarised in content blocks: health, physical condition, sports, body expression and nature. The selection and treatment of content will depend on the characteristics of the learners and the specific context.
- About *communication*, the aim is to increase STT (Student Talking Time) and reduce TTT (Teacher Talking Time). This measure contributes positively to the successful implementation of CLIL as well as to optimising active and collaborative learning.
- *Culture* provides an opportunity to discuss the content of PE by discussing preconceived ideas and myths (stereotypes, discrimination, etc.). In this way, learners build their own awareness, establishing their own opinions about the content, being able to integrate and connect the acquired knowledge with the real world.

- In terms of *cognition*, the following continuum of skills and thought processes involved in learning tasks is proposed: *remember, understand, apply, analyze, evaluate, and create*. Obviously, CLIL methodology will require high levels of cognitive involvement, putting into practice the cognitive activities of analysis, assessment, and creation.

2.2.3. SCM and CLIL in bilingual PE

Although PE is an eminently practical subject, it is vital to understand that modern PE is more than simply teaching different kinds of sport games (Zindler, 2013, p. 23): it also presents theoretical contents that must be taught and learned in the classroom, related to *Health, Fitness, Sports, Body Expression and Activities in Nature* (Sánchez-Alcaraz Martínez, Valero Valenzuela, Navarro Ardoy, & Merino Barrero, 2020). This does not mean that it has to be done in a passive way, but quite the opposite: I must look for dynamic ways of transmitting the theoretical knowledge of PE. According to the same authors above, PE teachers should be able to introduce game mechanics and dynamics when explaining or trying to teach theoretical content that is not traditionally taught through games. This is in line with current educational legislation, contributing to the key competence "learning to learn" (MEFP, 2020).

If PE is not taught in this way, and is taught with little emphasis on the content previously highlighted, little development of critical thinking and little interdisciplinarity with other subjects in the curriculum, CLIL is unlikely to generate rich, deep and meaningful learning (Fazio et al., 2015, p. 919). Therefore, for the teaching of these theoretical contents under the CLIL approach, new active and SCM will be necessary. Instead of the central method centred on him, the teacher's role should be that of facilitator, guide, and support. In addition, under this method, students should be encouraged to develop the skills to be able to solve a problem, create a product, reach agreements or conclusions, and present the results to others. In short, we create competent learners: becoming an adult who will be able to do the same in real life or in work environments. Thus, we enhance personal autonomy and increase intrinsic motivation (Barbero Andrés, 2012, p. 8).

Ouazizi (2016) analysed the effects of CLIL on mathematics as a subject and English as a vehicular language. Using a qualitative design, with questionnaires and

data coding, responses were obtained on learners' attitudes towards Mathematics through English before and after CLIL; learners' attitudes/attitudes to English before and after the CLIL intervention; and learners' use of English outside the classroom. These were analysed interpretatively (neutral, good, average, positive). The author concludes that CLIL education is more effective than traditional approaches in improving both Mathematics and English.

Another example is the following: active methods such as Guided Discovery, Problem Solving, Creativity and Autonomous Learning, seem more interesting for teaching theoretical content, since they favour the emancipation of pupils and the development of their decision-making capacity (Fazio et al., 2015, p. 924).

The PE subject has its own educational models which aim to achieve greater motivation, participation, autonomy and responsibility in pupils through the development of content specific to the subject: *Cooperative Learning, Teaching Games for Understanding, Sports Education, Personal and Social Responsibility model, Attitudinal Style*, among many others (Pérez-Pueyo, Hortigüela-Alcalá, & Fernández-Río, 2021). Many of them are perfectly applicable to the PE-in-CLIL. For example, with SCM such as the *Ludotechnical Model* in PE, we contribute to the acquisition of specific theoretical knowledge of athletics (it can be in a foreign language, the CLIL approach) in a motivating and meaningful way, in high school students (Sánchez-Morales, Valero-Valenzuela, Manzano-Sánchez, & López-Jiménez, 2016). Theoretical knowledge is hybridised with real and applicable practice. The same applies to the *Sport Education* model in terms of theoretical concepts and decision-making of sport itself (Sánchez-Alcaraz Martínez et al., 2020, p. 237). Under this CLIL approach, the PE subject, because of its demonstrative nature, does not have to focus solely on the foreign language, but can compensate for lower levels of linguistic competence in the foreign language by combining it with movement (Zindler, 2013, p. 27).

Some methodological recommendations in PE-in-CLIL are that teachers must be careful not to reduce the use of the foreign language to only giving instructions, so that learners do not only use the language receptively and take advantage of the full potential of CLIL. On the other hand, teachers should be careful not to spend too much time teaching specific vocabulary in the foreign language, as this takes up excessive time and motor commitment to CLIL principles. Ideally, it should merge learning the

foreign language through movement and learning movement through the foreign language at the same time (Zindler, 2013, pp. 27–28).

Therefore, methodological recommendations can be established in order to apply CLIL appropriately in the practical PE classroom (Coral & Lleixà, 2016, p. 124):

- To translate practical knowledge into English during the rest phases (the recovery period between exercises) in the most demanding motor activities.
- To avoid long explanations that reduce children's movement time by breaking down complex games into two or three simpler progressive sequences.
- To include refereeing teams in the teaching of sports and to ask them to justify their decisions by rewarding correct verbalisation.
- To integrate language into tasks by avoiding activities that slow down the pace of play.
- To incorporate scaffolding tools to facilitate communication and integrate motor content with linguistic content.

Nowadays, there is a great number of research on SCM under the CLIL approach. It is impossible to cover them all, so I will focus on the most relevant and contrasted in the scientific literature (Bilsborough, 2013; Dillenbourg, 1999; Juan Sánchez, 2020; O'Dowd, 2018; Ozdamli & Asiksoy, 2016):

- Task-Based Learning (TBL) and Project-Based Learning (PBL).
 - In TBL, the central focus is the task itself, not the grammatical structure or specific vocabulary. The goal is to complete the task successfully, and to build knowledge through it. There is no set way to complete it, so creativity will be potential. Learners therefore focus on solving a real, contextualised problem and their learning is meaningful. This is achieved through the integrated use of language and content.
 - PBL is very similar to TBL but scales up to a higher level. Whereas TBL makes one task the focus of one lesson, PBL often makes one task the focus of a whole term or academic year. Cross-curricular work between subjects is present in PBL, where the aim is to achieve a great final goal, shared by the whole working group. Typically, research is carried out, ideas and information are shared, teamwork takes place, conclusions are

drawn, and finally, a real and meaningful final product is obtained. Clearly, as with tasks, the integrated use of language and content is promoted.

- Cooperative and Collaborative Learning. Both are active methodologies in which student participation is fundamental: the teacher acts as a facilitator. It is strongly merged with TBL and PBL, as the ultimate goal is to complete a task/project. To achieve this goal, social interaction and teamwork are mandatory, as the final goal, task or project is the same for everyone. Through this type of SCM I train a person who knows how to collaborate in order to solve common problems, being respectful, listening to others, etc. In short, learning that can be applied to real life.
- Use of Information and Communication Technologies (ICTs) and Learning Technologies Knowledge (LTK). Why use this type of methodology? The use of new technologies is an everyday occurrence among the population. By bringing it into the classroom for educational purposes, learning will be more motivating and meaningful, as well as teaching how to use these tools in a safe and effective way. Moreover, there are numerous pros: encouraging student autonomy, sharing information, ideas, experiences, etc., allowing the presentation of content, encouraging online collaborative work, improving linguistic and communicative competence, etc. Technology can play a powerful role in the implementation of learner-centred learning if it is used to empower learners and learning teams (Glowa & Goodell, 2016, p. 62). Finally, it is important to remember that Digital Competence is a key competence in the Spanish curriculum, so I must work on it transversally in all subjects.
- Flipped Classroom techniques (more detailed below).

2.2.4. Flipped Classroom techniques

To begin this section, it is necessary to point out that Flipped Classroom is an active, student-centred approach that was formed to increase the quality of period within class (Ozdamli & Asiksoy, 2016, p. 99). It is characterized by flipping the common instructional education approach:

With teacher-created videos and interactive lessons, instruction that used to occur in class is now accessed at home, in advance of class. Class becomes

the place to work through problems, advance concepts, and engage in collaborative learning. Most importantly, all aspects of instruction can be rethought to best maximize the scarcest learning resource-time (Tucker, 2012, p. 82).

In short, tasks traditionally done in the classroom (e.g., presentation of theoretical contents) become home tasks, and tasks normally constituting homework become classroom task (Akçayır & Akçayır, 2018, p. 334; Bishop & Verleger, 2013, p. 4). See a summary representation in Figure 2.

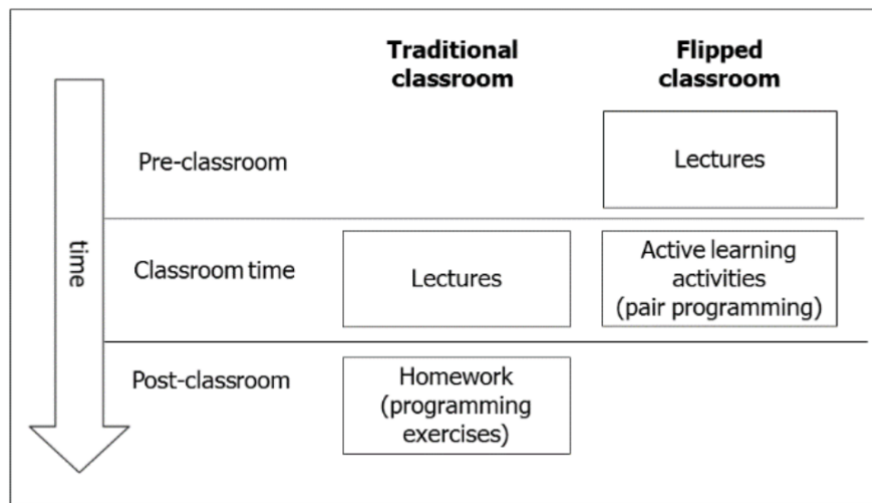


Figure 2. The traditional classroom and flipped classroom juxtaposed (Mok, 2014, p. 8).

On the other hand, different types of flipped classroom methods can be identified (Ozdamli & Asiksoy, 2016, pp. 101–103):

- *Traditional Flipped Classroom Model*

This model can be summarised as “what is done at school done at home, homework done at home completed in class”. First, students watch a content video at home. Second, in class, questions and answers are proposed. If something is not understood, the teacher stops to reinforce it. Finally, the teacher creates tasks based on questioning and gives one to one support to students.

- *Partial Flipped Classroom Approach Model*

This is less strict than traditional Flipped Classroom. It means that videos on the content of the subject are available to students, but there is no penalty for not watching them.

- *Holistic Flipped Classroom Model*

As we can read in the previous article, “Holistic Flipped Classroom is a model that contains total of home, mobile and physical classrooms synchronously” (Ozdamli & Asiksoy, 2016, p. 102). Basically, students can attend synchronous online classes in a variety of ways, exchange experiences with teammates and teachers, and even complete assignments proposed by the teacher at the same time.

In general, there are a lot of practical applications that can be used in the Flipped Classroom model according to the scientific literature (Akçayır & Akçayır, 2018):

- In class, I can propose discussions, small group activities, problem-solving tasks, questions and answers, group discussions, collaborative group work, case studies, quizzes, students’ presentations, gaming, micro lectures, projects, writings, brainstorming...
- Out of class, students can observe videos, do readings, quizzes, discussions, PP presentations, homework, reflections, online tests, web quest, further research, audio lectures, interactive tutorials...

Moreover, the Flipped Classroom method is fully applicable to our CLIL lessons. For example, you could upload a video in the foreign language to explain some specific content of the subject. Students could observe it, and then in class I would do a quiz to see what they have learned and depending on the results I would focus more on one topic or another. It could be interesting to create a video observation with Edpuzzle integrated: while students are watching the video, Edpuzzle asks them questions in real time that they have to answer, which forces them to watch the video and helps the teacher to control who attends and who does not.

Finally, the Flipped Classroom is an active methodology appropriate for PE lessons. As I must make the most of the class to encourage physical activity and motor engagement time, the Flipped Classroom methodology is a suitable alternative for teaching the above-mentioned important theoretical contents (Campos-Gutiérrez, Sellés-Pérez, García-Jaén, Ferriz-Valero, & Gutiérrez, 2021).

Taking all of the above into account and in my opinion, the Flipped Classroom method is an excellent option for teaching the contents of our subjects, promoting motivating and meaningful learning for students.

3. RESEARCH METHODOLOGY

3.1. Type of research study

First of all, my research was *practical research*, assessing the planning and curricular design of PE, methodological techniques, appropriate assessment.... All this was carried out in the classroom in a practical way. In addition, *primary research* was carried out, dealing directly with students in the classroom. It has the advantage of being closer to the primary source of information.

On the other hand, this study was *qualitative research*. In this methodological approach, data were collected through observations, interviews, diaries, or any other qualitative procedure. It is more appropriate than a quantitative study to test its effectiveness in this context, warmer and closer to the classroom environment. By hybridising it with the *statistical method*, more reliable results were obtained. Therefore, a statistical study was proposed to assess a given teaching-learning methodology of theoretical contents in various groups of students, comparing them, and analysing which has been more effective.

On the other hand, the study was *quasi-experimental*. A pretest/treatment/posttest design was used to check the achievement of the study objectives and to write pedagogical principles as conclusions. In addition, a good idea for this research study was to make it *analytical research*, aiming to analyse various factors of CLIL learning and theoretical content of PE separately.

Finally, I was able to apply this research as a *cross-sectional investigation*, as the data were taken at a specific point in time and not spread over years.

3.2. Sample and characteristics of the groups

The school where the study will be carried out is a public secondary school in Huelva (Spain). The village where I am located is halfway between the coast and the mountains. The municipality is located in the natural region of *Andévalo*. The main industries in the town are footwear and furniture.

The school is located in a neighbourhood with a wide area of influence: a large part of the municipal urban area, with a wide range of socio-economic and family situations.

The total number of pupils in the 2018/2019 school year was 634 (data extracted from the Educational Project), with variations in this number depending on the year, with varying starting situations and abilities. Of these, there are 15-20 foreigners in increasing numbers.

In general terms, pupils have an increasingly widespread difficulty in terms of a lack of effort and a lack of appreciation of study. This difficulty becomes more obvious in E.S.O. (Compulsory Secondary Education), with students who have learning problems, who find it difficult to learn and are not used to making an effort to do so. Part of this situation is transmitted to the first year of Baccalaureate, due to the intrinsic difficulty of this type of post-compulsory education, which requires a greater dose of effort and continuous work and greater personal motivation to study.

On the other hand, the target sample was a group of fourth-year students from this public secondary school. A total of 51 students, aged between 15 and 17 years, were included in the study. Their level of PE content was medium, while their language and linguistic level was low (except for some pupils with a high level). I had two hours of PE per week. It was found that all pupils had Internet access at home. For the qualitative analysis, the sample was analysed by the PE teacher.

There were two groups (experimental and control group):

- Experimental (CLIL group with SCM): with 23 pupils (7 girls and 16 boys).
- Control (CLIL group without SCM): with 28 pupils (22 girls and 6 boys).

As for the inclusion criteria, these were:

- Attending all theory lessons or watch all videos.
- Correct completion of the perception survey and CLIL-knowledge test.

Furthermore, in order to be included in the control and experimental groups, students had to complete at least 75% of the planned tasks:

- The experimental group using Edpuzzle (an educational platform for editing and sharing videos with students securely) and Google Classroom.
- The control group in paper format.

Students who did not meet these inclusion criteria were included in the non-monitoring group. Thus, participants were finally classified into the following study groups: experimental (n = 16), control (n = 14) and no monitoring (n = 21).

3.3. General timetable and timing

The intervention was carried out during the 3rd term of the school year, from April to June. During this period, the following action plan and timetable was followed (see Table 1):

Table 1. General timetable and timing.

DATE	ACTION TAKEN
<i>March-April</i>	- Literature review - Selection of the sample: experimental and control group - Intervention design: elaboration of didactic materials - Preparation of questionnaires and surveys
<i>April-May</i>	- Initial data collection: questionnaire - Implementation of the intervention and experiment
<i>May-June</i>	- Final data collection: questionnaire and survey - Data analysis - Results and conclusions

4. DATA COLLECTION AND ANALYSIS

4.1. Procedures for data collection

- *PE-in-CLIL content and language assessment questionnaire (online) - pre and post (Appendix 1)*

A test, quiz or examination, in the form of a questionnaire, was proposed to pre-determine knowledge of the specific content of the PE, as well as of specific aspects of foreign language (PE-in-CLIL). It consisted of 20 questions of various types: multiple-choice, multiple-selection and true-false questions. It was administered in online format via Google Forms for both the experimental and the control group. The same questionnaire was applied after the experiment to see the changes produced on PE-in-CLIL knowledge, and to conclude which methodology had been more effective (student-centred or not). The questions will be extracted from the theoretical notes and the videos that the students will have to watch and are categorised into three topics: 1. *Physical Activities in the Natural Environment (PANE)*, 2. *Hiking*, and 3. *Orienteering*.

- *Survey to evaluate the students' perception of the teaching-learning methodologies (online) – post (Appendix 2)*

For the analysis of this objective, an instrument was designed consisting of 20 questions grouped into different categories on the applied teaching-learning methodology (see Chart 1): *satisfaction* (questions 1 and 2), *boredom* (questions 3 and 4), *motivation* (questions 5 and 6), *confidence* (question 7), *quality* (question 8), *cooperation* (questions 9 and 10), *communication* (questions 11 and 12), *mastery of learning* (question 13), *pacing* (question 14), *time used* (question 15), and *use of ICTs* (questions 16 and 17).

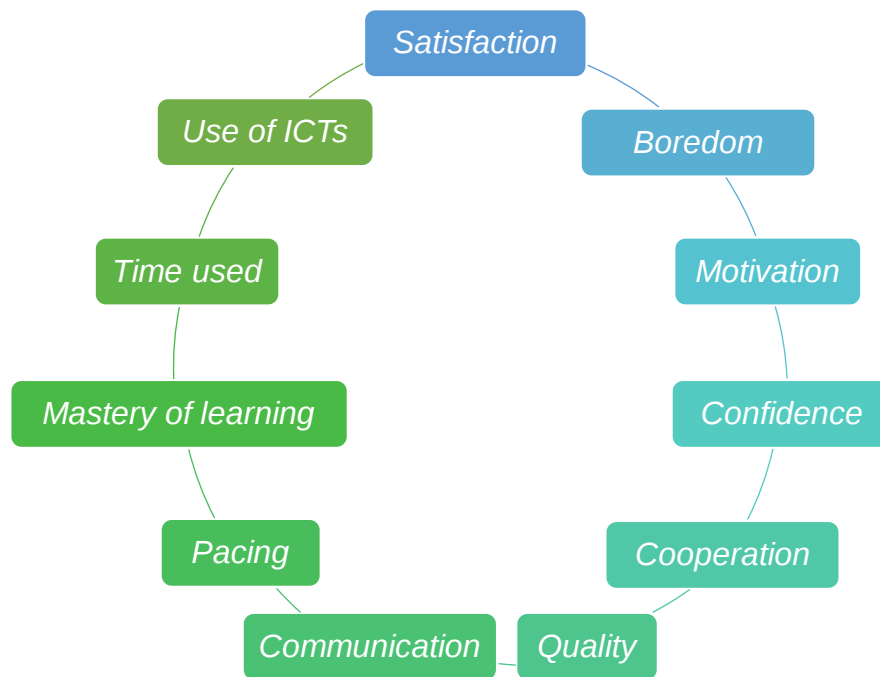


Chart 2. Variables and categories of the perception survey (my own design).

A 5-level Likert scale was used for quantitative analysis, where the values range from 1 to 5, with 1 being the value corresponding to the response with the lowest value and 5 the response with the highest value. The statistical analysis carried out focuses on closed multiple-choice questions, which according to the scientific literature (Landa Cavazos & Ramírez Sánchez, 2018, p. 162), are the most appropriate, simple and efficient for deal with information. In contrast, open-ended questions were asked for qualitative analysis at the end of the survey (Brent Johnson, 2013, p. 38).

The implementation of the data collection instrument was carried out using the Google Forms tool, which allows surveys to be applied via the Internet. The collection of data through Internet forms has several advantages, as it is less intrusive, allows large amounts of questionnaires to be completed in a short time, collects data automatically, etc. (Edith D. de Leeuw, Hox, & Dillman, 2012, p. 133).

- *Validity and reliability of the instruments used*

According to some authors (Landa Cavazos & Ramírez Sánchez, 2018, pp. 164–165; Edith D. de Leeuw et al., 2012, p. 137), the steps that a research instrument must follow in order to be valid and reliable must be as follows:

1. Develop the instruments: one to measure content and language, and one to measure students' perception.

2. To carry out a qualitative review of the instrument by means of a panel of experts. This was done by some MIEB teachers and Dr. Antonio Bueno, from the Department of English Philology.
3. To carry out a first pilot test to validate the reliability of the instrument by means of the Cronbach's alpha index.
4. To carry out a second pilot test to carry out a construct validation by means of an exploratory factor analysis of the instrument.
5. Finally, after analysing the results of the factor analysis, proceed to the acceptance of the questionnaire.

4.2. Techniques for data analysis

In this study data were collected using both quantitative and qualitative methods (Brent Johnson, 2013, pp. 37–40).

- *Quantitative data*

At the end of the experiment, the students received a perception survey. During the experiment time they had the opportunity to develop their perceptions of the applied methodologies. As mentioned above, the survey consisted of 17 five-level Likert scale items that provided the quantitative data for the study. The data were processed as ordinal data because it was not feasible for participants to know the difference between two measurements. Within this quantitative section, variables such as mean, standard deviation, median and mode can be analysed. To interpret the information extracted, the data will be presented in bar charts and percentages of selected responses.

- *Qualitative data*

In addition to quantitative data about perception, it was also important for the study to include an understanding of the students' perceptions of the methodologies applied in their own words. The three open-ended written questions at the end of the survey provided students with the opportunity to describe their own experiences and offer their comments, something that is not possible with a Likert-scale questionnaire. From these open-ended student responses, common themes were summarised, where responses were similar, and translated into percentages. Students who did not respond were also counted.

The same qualitative and quantitative analysis was carried out for the PE content and CLIL language questionnaire, comparing the result in the initial test (pre) with the final test (post), and analysing the main differences obtained between the control group and the experimental group in terms of the PE-in-CLIL and the effectiveness of the methodology applied in each of them. Statistical variables such as mean, standard deviation, median, mode... can be analysed here.

5. PRACTICAL PROPOSAL

5.1. Educational intervention programme in the classroom

Taking into account the bibliographical analysis previously carried out, a didactic intervention was proposed in the PE classroom under a SCM, specifically based on Flipped Classroom techniques, use of ICTs and cooperative learning, and comparing it with another central methodology not based on the student (traditional).

Both methodologies were adapted to the specific contents of bilingual PE: in particular, Physical Activities in the Natural Environment. Through this content, cross-curricular work between subjects such as PE, Biology, Science, with content such as the environment, health, etc. was promoted.

For the *experimental group (CLIL group with SCM)*, the teachers recorded educational videos under the Flipped Classroom methodology for the students to watch, embedding questions with Edpuzzle. This educational platform (Edpuzzle) allows students to create, edit and share videos to view the different contents, before attending class, and answer a series of questions related to the viewing, where the teacher can check the degree of prior knowledge of the students. See the educational platform in the following [link](#).

A total of 3 videos were recorded: one on *Physical Activities in the Natural Environment*, one on *Hiking*, and one on *Orienteering*, each about 10 minutes long. Intermediate tasks carried out in groups in cooperation and a final competency task (TBL) will also be proposed for students to integrate what they have learnt in the videos into a research task. An example of the teaching-learning dashboard can be found in Appendix 3.

Students' knowledge of the content and language aspects was tested beforehand by means of an online test, in order to check it again afterwards and see the effect of the SCM and the difference with the non-CLIL methodology. Moreover, in relation to student motivation and satisfaction, the effect of the methodology and its impact on the way of teaching-learning content and language in an integrated way was tested. For this purpose, an assessment questionnaire was used afterwards to compare between the control group and the experimental group, and which group was more satisfied.

The methodology used in the *control group (CLIL group without SCM)* was a traditional one, based on lectures and theoretical notes in the PE classroom, traditional classroom exercises in written and paper format and carried out on an individual basis, and a final test to assess content and language, as well as a survey to check student motivation and satisfaction.

5.2. Curricular aspects

The following *curricular elements* (see Table 2) are based on the prescriptions established by the following educational legislation, in application in the current academic year 2021/2022:

- Organic Law 3/2020, 29 December, which modifies Organic Law 2/2006, 3 May, on Education (MEFP, 2020).
- Royal Decree 1105/2014, 26 December, establishing the basic curriculum for Compulsory Secondary Education and the Baccalaureate (MECD, 2014).
- Order 15 January 2021, which develops the curriculum corresponding to the Compulsory Secondary Education stage in the Autonomous Community of Andalusia, regulates certain aspects of attention to diversity, establishes the organisation of the assessment of the student learning process and determines the process of transition between different educational stages (Junta de Andalucía, 2021).

Much of the information below is paraphrased, some is literally copied and translated into English, and some examples of my own are also included.

Table 2. Relationship between curricular elements.

STAGE OBJECTIVES	a) To assume their duties responsibly, to know and exercise their rights with respect for others, to practice tolerance, cooperation and solidarity among individuals and groups, to engage in dialogue by strengthening human rights and equal treatment and opportunities for women and men as common values of a pluralistic society and to prepare for the exercise of democratic citizenship.
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	i) To understand and express themselves in one or more foreign languages in an appropriate way. k) To know and accept the functioning of one's own body and that of others, respecting differences, strengthening body care and health habits and incorporating physical education and the practice of sport to favour personal and social development. To know and value the human dimension of sexuality in all its diversity. To critically assess social habits related to health, consumption, care for living beings and the environment, contributing to their conservation and improvement.
SUBJECT OBJECTIVES	9. To appreciate the richness of Andalusia's natural and urban environments, as well as the need for their care and conservation through their use and enjoyment by practising different physical activities in them.
KEY COMPETENCES	- Linguistic Communication Competence: reading and interpreting orienteering maps, writing in the portfolio, reading notes, discussions with others... - Digital competence: using digital applications for orientation (Naturando), visualising content (Flipclassroom), Classroom, online quizzes... - Learning to learn competence: analysing environmental problems, find their way around, follow trajectories, think... - Social and Civic Competence: developing skills of respect, fairness, non-discrimination and teamwork... - Sense of Initiative and Entrepreneurial Spirit: having initiative in solving tasks, being critical with the environment, being creative...
ASSESSMENT CRITERIA	1. Solving motor situations by applying technical fundamentals in the proposed physical sports activities, with efficiency and precision.

	9. Recognising the environmental, economic and social impact of physical and sporting activities, reflecting on their repercussions on the way of life in the surrounding area. 13. Participating in physical activities in the natural and urban environment, as a means for the improvement of health and quality of life and active occupation of leisure and free time.
CONTENTS	- Carrying out physical activities in the natural environment as a means of improving health and quality of life and active occupation of leisure and free time, such as: climbing, sailing, kayaks, etc. - Techniques of progression or movement in changing environments in the Andalusian environment. Individual and collective safety in physical activities in changing environments. - Creative proposals for the use of spaces and materials in an autonomous and safe way. - Learning how to handle personal equipment and maintenance techniques such as basic bicycle mechanics as conditions for safe practice. - Use of recycled materials in the practice of physical activities in the natural environment. - Encouragement of active travel. - Raising awareness of the effects of the different physical activities carried out in the natural environment and their relationship with the way of life, health and quality of life. - Encouragement of habits and attitudes of conservation, care, respect and protection of the natural and urban environment.
CROSS-CURRICULAR ASPECTS	- Spanish Language and Literature: reading maps. - Geography and History: analysing the geographical maps and plans of the environment, specific symbols.

	- Biology and Geology: care and conservation of the environment, elements and areas of nature. - Technology and ICTs: use of ICT/LKT for games within the unit, Flipclassroom with Edpuzzle. - Mathematics: calculating distances, scales.
LANGUAGE OBJECTIVES	- To identify and learn some specific vocabulary related to Physical Activities in the Natural Environment, as well as Nature, Hiking and Orienteering through different formats and tasks. - To understand oral and written presentations on the subject matter of the PE content in the foreign language. - To discuss language and content learning collaboratively in different interactive situations.

5.3. Classroom methodologies

In the *experimental group (CLIL group with SCM)*, a SCM was used, such as Flipped Classroom, use of ICTs, competence tasks, and cooperative and collaborative work, which promote the acquisition of competences, the achievement of objectives, and the integrated learning of contents and languages, in a meaningful, contextualised, dynamic, and real way. The autonomy and personal growth and development of learners was also encouraged.

In the *control group (CLIL group without SCM)*, a traditional, somehow passive methodology was used, based on teacher presentation/explanation and passive student reception, together with activities carried out on an individual basis.

5.4. Catering for diversity

Attention to diversity is understood as the "essence" of education, and an indispensable requirement for the process to be of quality. There is no "quality" without "equity". The educational response must be based on flexibilisation and inclusive attention, favouring positive experiences for the achievement of objectives and key competences. Cooperative Learning and PBL are particularly important as inclusive methodologies for attention to diversity (MECD, 2014).

In short, the specific measures to cater for diversity during my proposal will be:

- Variety in the presentation of the information related to content and language: through images, videos, sounds, texts...
- Variety of grouping configurations (individual, pairs, groups), which will facilitate the adaptation of the learning process to students with different needs and linguistic competences.
- Alternative ways of expressing the result or product: through language, drawings, selecting the correct answer, associating, marking, writing, using ICT, etc.

5.5. Contents, sessions and tasks

The block of contents of *Physical Activities in the Natural Environment* covers a wide range of educational contents, among which the following can be highlighted:

- General activities: Sports facilities, parks, paths, cycle lanes, etc. Respect for the surroundings and the environment. Self-building with recycled materials. Prevention of accidents in the natural environment.
- Hiking and Orienteering: trails, equipment, clothing, climbing, Nordic walking, knowing the map, locating points, orientation, following tracks, among others.
- Climbing, ropes, knots.
- Water activities (sailing, kayaking, paddle surfing, to name just a few).
- Bicycle mechanics and active travel. Practice of urban physical-sporting activities such as skateboarding, parkour, rollerblading, etc.

Although tasks could be developed to cover all these contents, it would be very extensive. It is better to focus on some of them. For this reason, I will focus on *Nature Activities* in general, and more specifically on two that are very frequently developed in the natural environment: *Hiking* and *Orienteering*.

The whole intervention is contained in an Integrated Lesson Plan (ILP), of about 3 weeks duration, which consists of a total of 5 sessions, which are detailed below.

5.5.1. Session 1

For both groups, this session was dedicated to explaining what the intervention consisted of and a general explanation of the study, as well as briefly introducing the Nature Activities content block. It was explained how each group should proceed in order to carry out the assigned tasks correctly.

In this same session the online assessment test (*pre-test*) of the content and language skills of the Nature Activities was taken (see Appendix 1). This test, already explained in previous sections, was carried out by using Google Forms and mobile devices.

Students who did not complete the test were placed in the non-tracking group and were not monitored.

5.5.2. Sessions 2, 3 and 4

For both groups, three sub-units within Nature Activities were worked on:

- Topic 1: Physical Activities in the Natural Environment
- Topic 2: Hiking
- Topic 3: Orienteering

For the *experimental group (CLIL group with SCM)*, the intermediate work sessions of the unit were based on three educational videos elaborated with the Edpuzzle platform, together with questions embedded in the videos. Therefore, students visualised and learned the theoretical content at home (online and virtual format), and when they came to class, we did not have to spend time on these explanations. Class time was used for practical sessions of games on orienteering and hiking. After watching all the videos, doing the tasks (see Appendix 4) and acquiring the knowledge, the students were asked to elaborate a final research task on what they had learnt (see Appendix 5). In this way, they were able to integrate everything they had learnt in a competent and meaningful way.

For the *control group (CLIL group without SCM)*, a traditional methodology was proposed, which consisted of presentation sessions by the teacher and somewhat passive listening by the students in the classroom, using a projector and digital

presentations, as well as theoretical notes for the students. This was done during several sessions, one for each topic, accompanied by worksheets and written activities of various types on what was learnt in class (see Appendix 6). Therefore, the possibility of using these sessions for the students to go out in the playground and play practical games about orienteering, hiking, etc., is eliminated. The only possibility is to use more sessions for ILP.

Students who did not complete the tasks, did not attend classes or did not watch the Edpuzzle videos were placed in the non-tracking group and were not monitored.

5.5.3. Session 5

In the last session of the unit all the tasks carried out by the students were collected and the corresponding feedback was given. A joint reflection on the unit was also done.

In addition, an online assessment test of the contents and language competences of the Nature Activities was taken (see Appendix 1). The same test as at the beginning, but this time it serves to see what they have learned after the application of the intervention (*post-test*). This test was again taken by using Google Forms and mobile devices for both groups, in order to facilitate the processing and analysis of the data collected.

Finally, the students in both groups were given the perception survey (see Appendix 2) explained in previous sections, which they completed using their mobile phones.

Students who did not complete the test and/or the survey were placed in the non-tracking group and were not monitored.

A representative outline of the intervention is shown in Table 3.

Table 3. Proposed tasks for both groups.

	EXPERIMENTAL GROUP	CONTROL GROUP
S1	Initial explanation of the intervention and the tasks to be carried out	
	Online questionnaire on the content and language of PANE (pre)	
S2	Task 1: Video 1 + Edpuzzle + Mini-task	Task 1: Explanation 1 + Sheet 1
S3	Task 2: Video 2 + Edpuzzle + Mini-task	Task 2: Explanation 2 + Sheet 2

	Task 3: Video 3 + Edpuzzle + Mini-task	Task 3: Explanation 3 + Sheet 3
S4	Final task: cooperative research about Physical Activities in the Nature	No final task
S5	Online questionnaire on the content and language of PANE (post)	
	Online perception survey (post)	

5.6. Resources

The resources used for both groups include (Table 4):

Table 4. Resources used.

EXPERIMENTAL GROUP	CONTROL GROUP
ICTs: Computers, smartphones, tablets	Paper notes
LKT: Canva, Word, PowerPoint	Expository theory classes
Flipped classroom with Edpuzzle	Written exercises
Online quizzes	Written tests

5.7. Assessment moments, procedures and instruments

Assessment is the process of obtaining information about learners. In education, it serves to ensure that appropriate levels of learning are achieved for the normal development of real life, in addition to guiding students in their decisions in accordance with the knowledge and skills they actually possess. In the E.S.O. (Compulsory Secondary Education), in accordance with the provisions of Royal Decree 1105/2014 (MECD, 2014), taking the Assessment Criteria as a reference, assessment should be:

- Continuous: applied as soon as educational needs are detected.
- Formative: improvement of the teaching-learning process.
- Integrative: from all subjects in an integrated way.

As far as assessment in CLIL is concerned, it should cover both content and language, although the main focus of assessment should be on content. Language should serve as a means of learning the content, discussing it and expressing it.

As for the moments of evaluation within an Integrated Lesson Plan, we find 3 situations: initial assessment, formative assessment and final or summative assessment.

- The initial assessment clearly corresponds to the initial content and language test on PANE. By analysing the results, we will be able to prepare a unit adapted to the level of curricular competence of the students.
- The formative assessment can correspond to work on paper worksheets for the control group, and to watching videos and answering Edpuzzle questions for the experimental group.
- The final assessment corresponds to the result obtained in the final (post) test on the content and language of the PANE. Comparing this with the initial one, we can see the learning acquired by the students after the development of the unit, and we can give a numerical grade.

On the other hand, with regard to assessment procedures and instruments, it should be noted that the education legislation indicates that shared assessment and student self- and peer-assessment should be encouraged, and that assessment instruments will be varied and adapted to the needs of the students (Junta de Andalucía, 2021).

Below is a summary of assessment activities suitable for use in this unit:

- Questionnaires on PANE content in the foreign language (CLIL approach).
- Vocabulary activities and sheets to acquire knowledge and develop foreign academic language.
- Oral debates and open questions in class in which students will have to search for information from different sources, construct their own arguments and present and defend them.
- Research activities and group work, to work cooperatively towards a final product, integrating content and language.
- Self-assessment and peer-assessment activities are included, to review their performances and provide feedback to progress in their learning.

Therefore, among the procedures and instruments that we will use in this didactic proposal, the following stand out:

- Procedures:
 - Teacher observation
 - Inter-group and intra-group assessment
 - Self-assessment
 - Student production
- Instruments:
 - Online questionnaires to assess (see Appendix 1)
 - Theoretical worksheets and interactive activities (portfolio). See Appendix 4, Appendix 5 and Appendix 6
 - Rubrics
 - Self-assessment targets
 - Peer-assessment checklist, number scales and stickers

Finally, the assessment weight (expressed in percentages) of each assessable activity corresponds to the arithmetical average of the evaluation criteria, referents of the process. Each activity is associated with the corresponding assessment criteria of this unit as mentioned above. Therefore, the assessment would be configured as follows (see Table 5):

Table 5. Assessment activities and percentages.

ASSESSMENT ACTIVITY	%
Final (post) CLIL content and language questionnaire	25 %
Worksheet and online activities (daily work)	25 %
Viewing of videos and answering Edpuzzle questions or participation in class and discussions	25 %
Self-assessment activities and peer reviews	25 %

6. RESULTS AND DATA ANALYSIS

6.1. Results in terms of PE-in-CLIL content and language

6.1.1. Control group (traditional methodology)

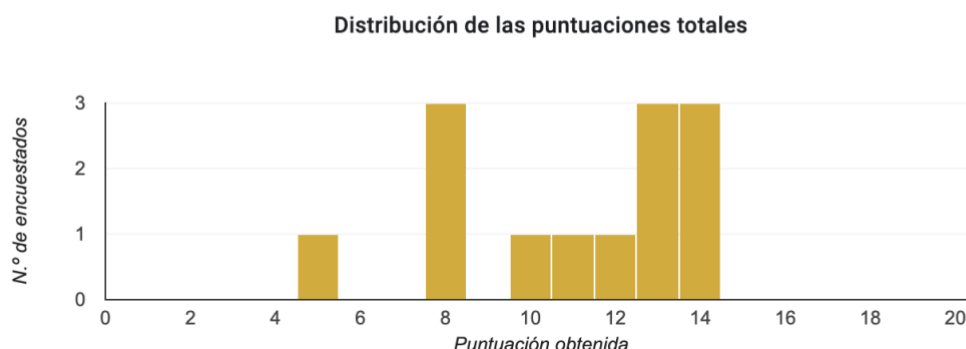
Firstly, it is worth noting the results of the pre-test for the control group. The mean value was 8 out of 20 points, with a normal score of 7.27/20. Furthermore, the range of points ranged from 2 to 13. These results can be seen in Graph 1 (Mode = 4. Median = 8).



Graph 1. Pre-test results in the control group (given by Google Forms).

In this control group, after applying a traditional methodology of theoretical lectures by the teacher, and relatively passive reception by the students, with written assignments in class, the results were as follows: mean value of 12 out of 20, normal score of 11/20, and a range of scores between 5-14 (see Graph 2, Mode = 8, 13 and 14. Median = 12).

Normal 11/20 puntos	Valor medio 12/20 puntos	Intervalo 5-14 puntos
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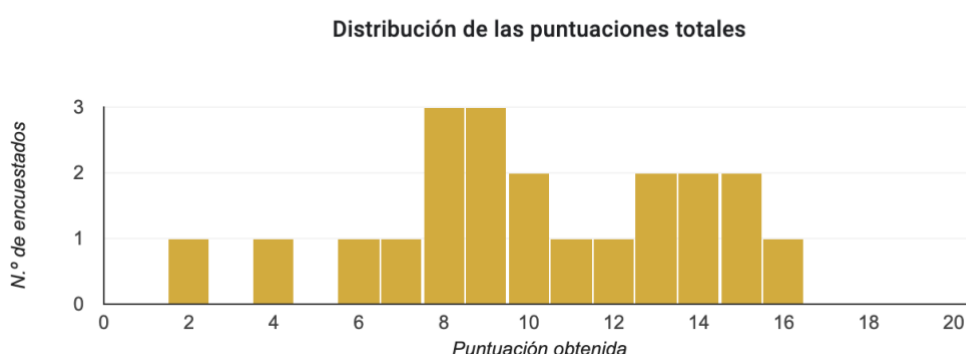
Graph 2. Post-test results in the control group (given by Google Forms).

Therefore, the difference between the pre- and post-test shows a percentage increase of 50% in this control group. For the same reason, we can determine that the applied methodology, even if it was traditional, provided benefits in terms of academic performance in CLIL content and language for the pupils in the control group.

6.1.2. Experimental group (SCM)

On the other hand, the pre-test results in the experimental group had a mean value of 10 out of 20 points, the normal score being 10.14, and in a range between 2 and 16 points (2 being the lowest score and 16 the highest). In the Graph 3 you can see a distribution of the scores (Mode = 8 and 9. Median = 10).

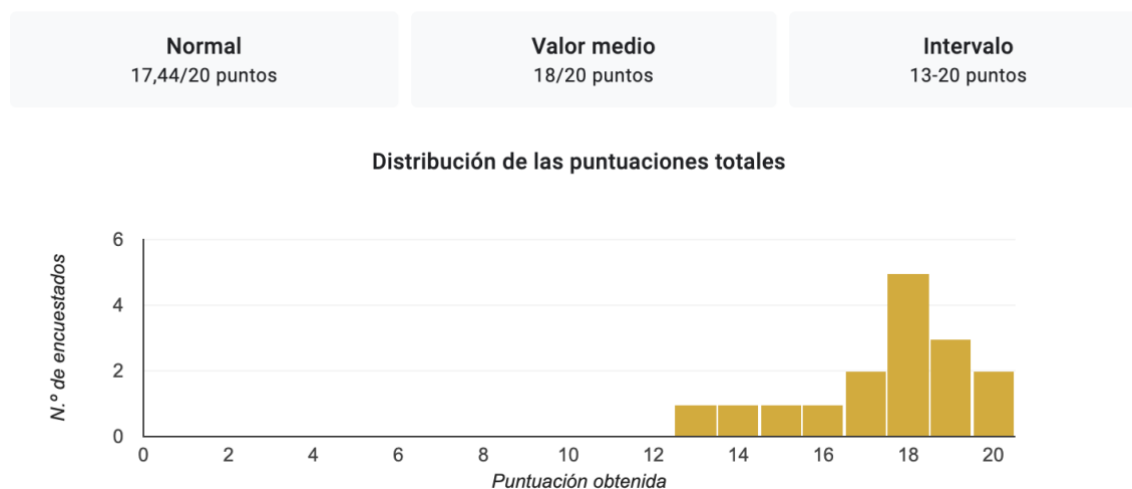
Normal 10,14/20 puntos	Valor medio 10/20 puntos	Intervalo 2-16 puntos
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Graph 3. Pre-test results in the experimental group (given by Google Forms).

As for the post-test results, after applying a student-centred CLIL methodology (that is to say, the visualisation of educational videos explaining the content in foreign

language, using the Edpuzzle platform), the results were amazing, and almost perfect. The mean value was 18/20, with a normal score of 17.44, in a range between 13-20. In Graph 4 you can see it (Mode = 18. Median = 18).



Graph 4. Post-test results in the experimental group (given by Google Forms).

Therefore, the average improvement between pre-test and post-test in the experimental group was 80%. Undoubtedly, the methodology applied in the experimental group, which is a SCM, has high benefits for content and language learning in bilingual PE in a CLIL context.

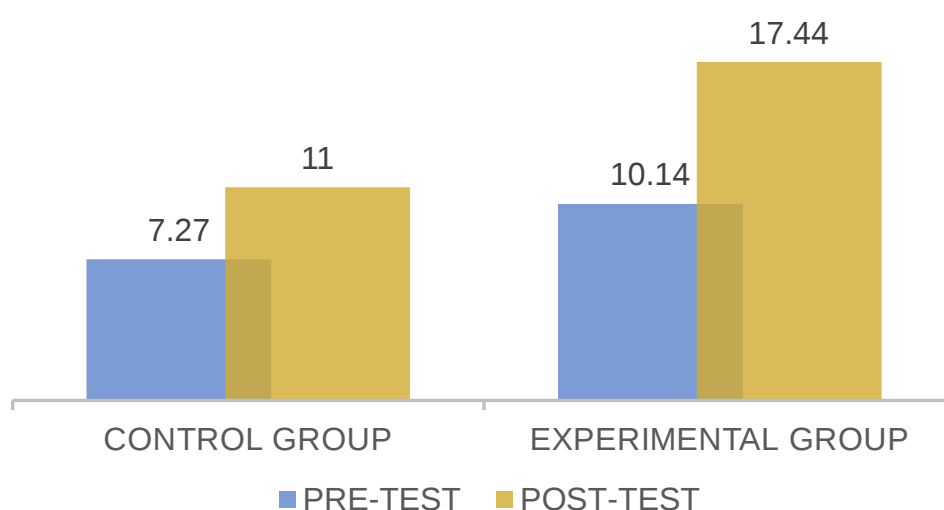
6.1.3. Differences between the two groups

Next, after analysing each group separately, comparing the pre-test with the post-test, we will analyse the differences between the two groups: the experimental group and the control group. In this way we will be able to determine whether the applied SCM has been more effective than the traditional methodology.

The first element to compare is the average score (see Graph 5).

- In the pre-test, the control group had an average score of 7.27, as compared to 10.14 out of 20 for the experimental group. With this we can determine that the experimental group has a higher level of curricular competence (39.47% higher) than the control group, at least in the content and language of the applied didactic unit (Physical Activities in the Natural Environment). This is interesting to take into account when drawing conclusions, as a lower (and not similar) starting level may cause the results to differ from reality.

- On the other hand, in the post-test, the control group improved to an average score of 11 out of 20, compared to 17.44 for the experiment group. The difference here between the control-experiment group is 58.54%. This data is extremely relevant, as it determines that, after applying the methodology to both groups, regardless of their starting level, the percentage of improvement in terms of test results is higher in the experimental group than in the control group. To clarify: those in the experiment group have improved their starting level in terms of CLIL content and language knowledge the most.



Graph 5. Pre-post differences between groups (my own production).

The second interesting thing to highlight is the range of scores.

- In the pre-test, students in the control group scored between 2 and 13 (out of 20 points). In the experimental group the minimum score was the same, but in contrast, the maximum score increased to 16 (+23%). This means that there are students in the experimental group with a better/higher level of initial competence.
- In the post-test, the control group moved in the range 5-14, improving its minimum score by 3 points and its maximum score by only 1 point. Undoubtedly, not very significant changes despite having addressed the content and language in class, albeit with a traditional methodology. In contrast, the biggest change was observed in the experiment group,

obtaining a range of 13-20 in the post-test. Therefore, it increased its minimum score by 160%, as well as some students reached the maximum score in the post-test (100% correct answers); specifically, 2 students. This indicates that the students in this experimental group, after learning with a SCM, have significantly improved their knowledge of the content and language of bilingual PE in the CLIL context.

Therefore, and taking into account all these data, we can affirm that the methodology applied in the experimental group was more effective in terms of the results in the content and language test than in the control group, where a traditional methodology was applied. In numbers, the experimental group performed 60% better on the post-test than the control group.

The results of this study are similar to those found in other articles in the scientific literature (Akçayır & Akçayır, 2018; Ouazizi, 2016): SCM improve both the content and language of CLIL subjects over more traditional methodologies. These authors state: “one of the most significant advantages of this model is that it helps to improve learning performance” (Akçayır & Akçayır, 2018, p. 338). In the same vein, another study led by Galway, Corbett, Takaro, Tairyan, & Frank (2014) found that students reported an increase in knowledge under the flipped classroom model.

Despite this, in some scientific studies such as the one by Campos-Gutiérrez et al. (2021), although there were differences, they were not significant enough between the group with traditional methodology and the group where Flipped Classroom was applied after the content and language test. The Flipped Classroom group obtained slightly better results. The same is highlighted in another study (Jensen, Kummer, & Godoy, 2015): the authors conducted a quasi-experimental design study to compare two groups, as in the case of my study: flipped classroom and non-flipped classroom students, to examine the effects of this model on students' learning achievement. They concluded that learning performances were equal between the two groups.

Another question that would be interesting to analyse is the one raised in the study by Campos-Gutiérrez et al. (2021): the Flipclassroom methodology is similarly effective to the traditional methodology, so if with the traditional methodology students acquire CLIL content and language, with the Flipclassroom methodology we ensure that they also acquire it at the same level. By using Edpuzzle we guarantee that the videos are

watched and that they pay attention, because if they fail the integrated questions, they are subtracted a mark.

6.2. Results in terms of students' perception of the applied CLIL methodology

As I mentioned above, in order to check what the students thought of the methodology that had been applied and to find out their perception of it, a survey was prepared and completed with Likert scale answers, where the students rated from 1 to 5 different questions associated with different categories (see Figure 3). The intention was to compare the different categories between the two groups (control and experimental) and thus be able to compare the two methodologies in order to draw conclusions.

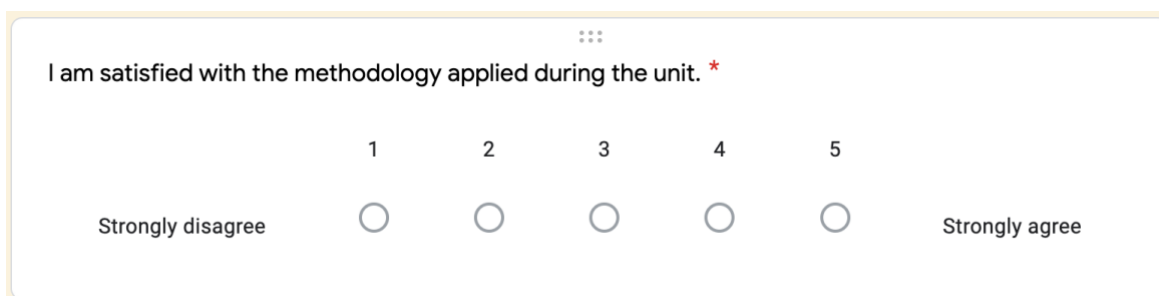


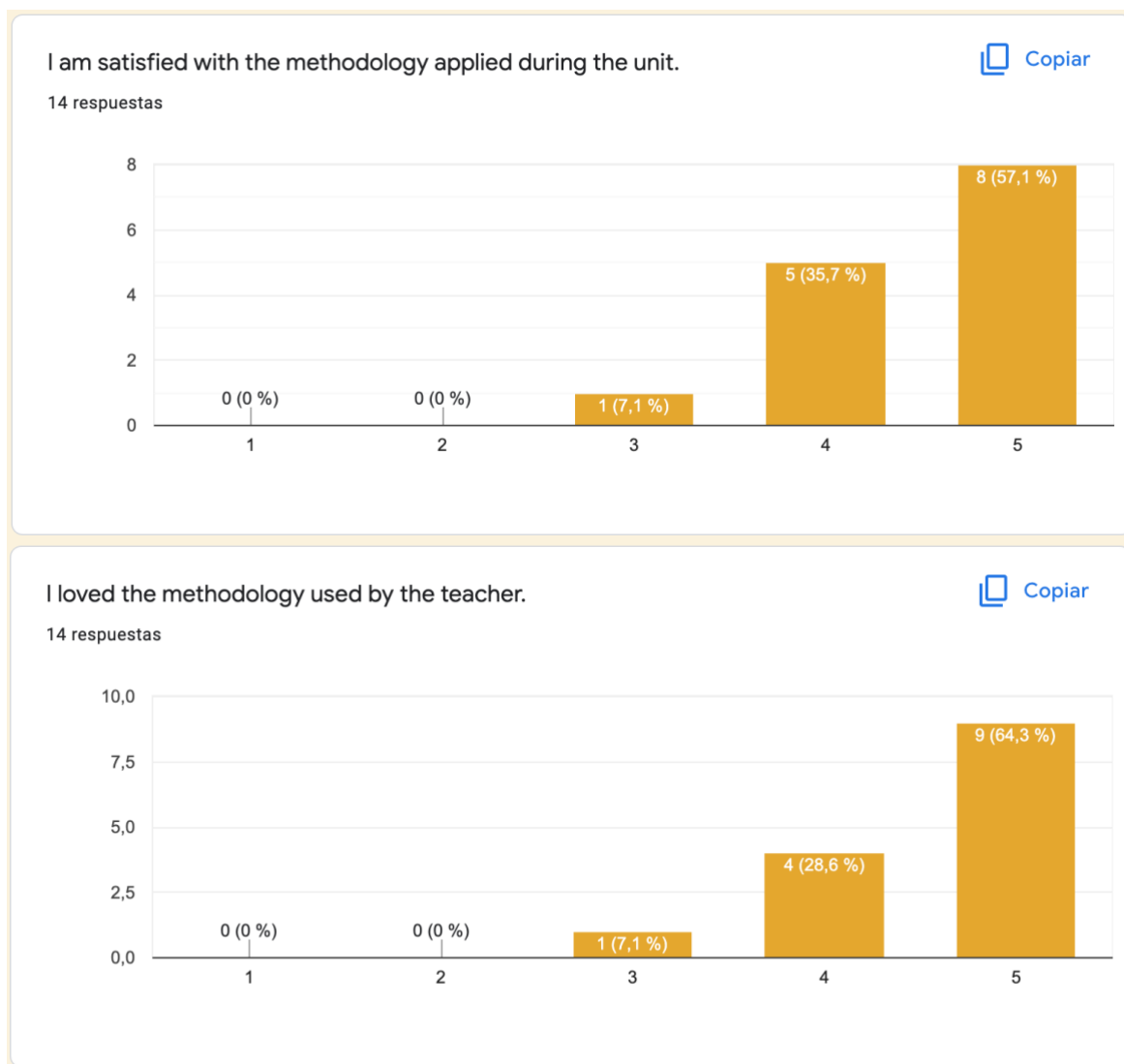
Figure 3 shows a sample survey question with a 5-point Likert scale. The question is "I am satisfied with the methodology applied during the unit. *". The scale consists of five radio buttons labeled 1, 2, 3, 4, and 5. Below the scale, the text "Strongly disagree" is on the left and "Strongly agree" is on the right.

Figure 3. Sample survey question with a 5-point Likert scale.

In the following subsections we will analyse variable by variable. It is important to note that the total number of responses was 14 people in the control group and 16 people in the experimental group.

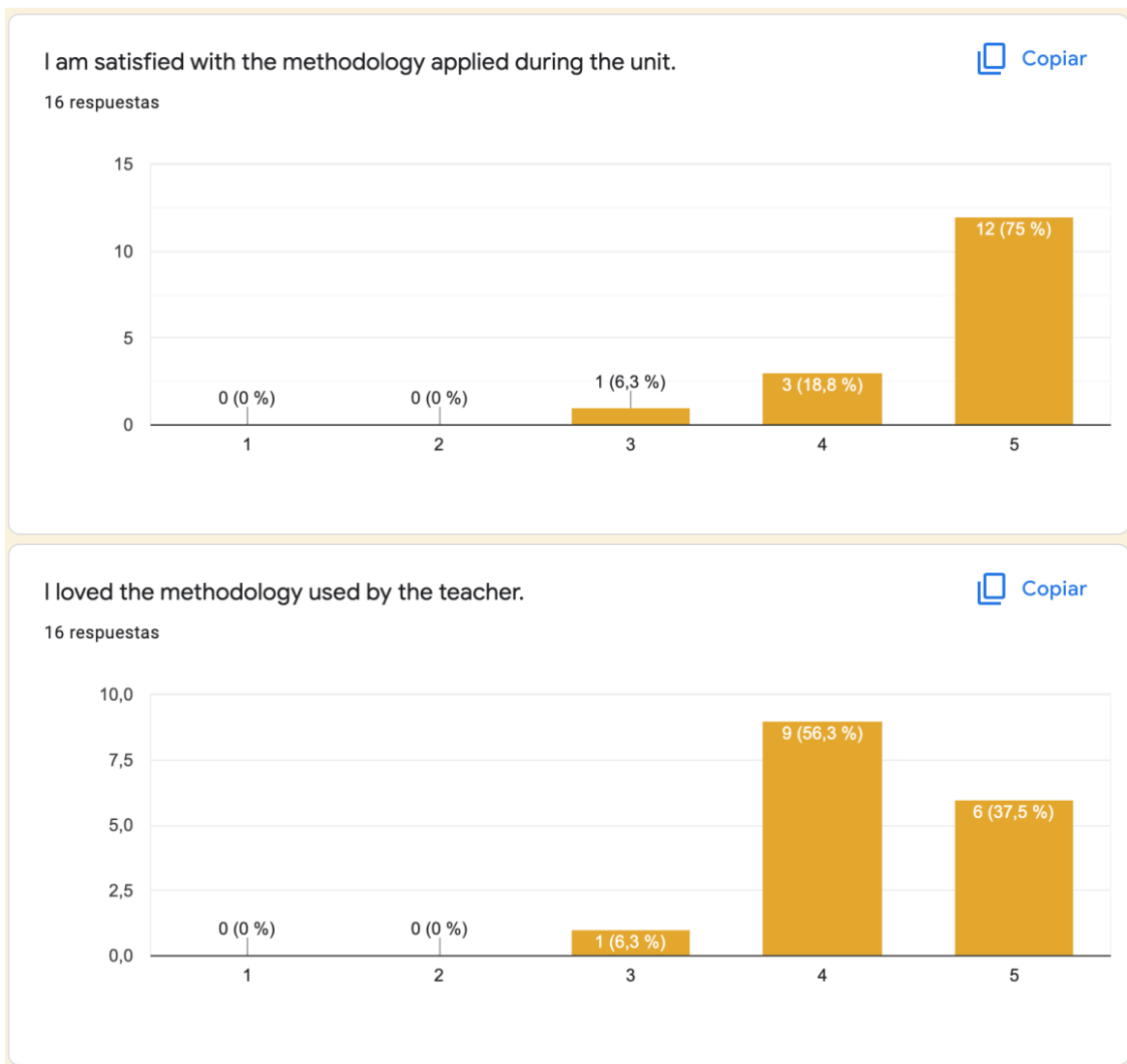
6.2.1. Satisfaction. Questions 1 and 2

In the control group, approximately 60% voted for the highest satisfaction, while the rest were divided between scores 3 and 4 (see Graph 6, Mode = 5. Median = 5).



Graph 6. Variable "satisfaction" in the control group.

In the experimental group, responses were more evenly distributed. Only one student voted an intermediate score, while the majority were satisfied with the methodology used (75%). On the contrary, more than half indicated that they nearly agreed that they loved the methodology (see Graph 7). For this reason, it is highlighted that they were satisfied but did not like it as much as possible (Mode = 5. Median = 5).

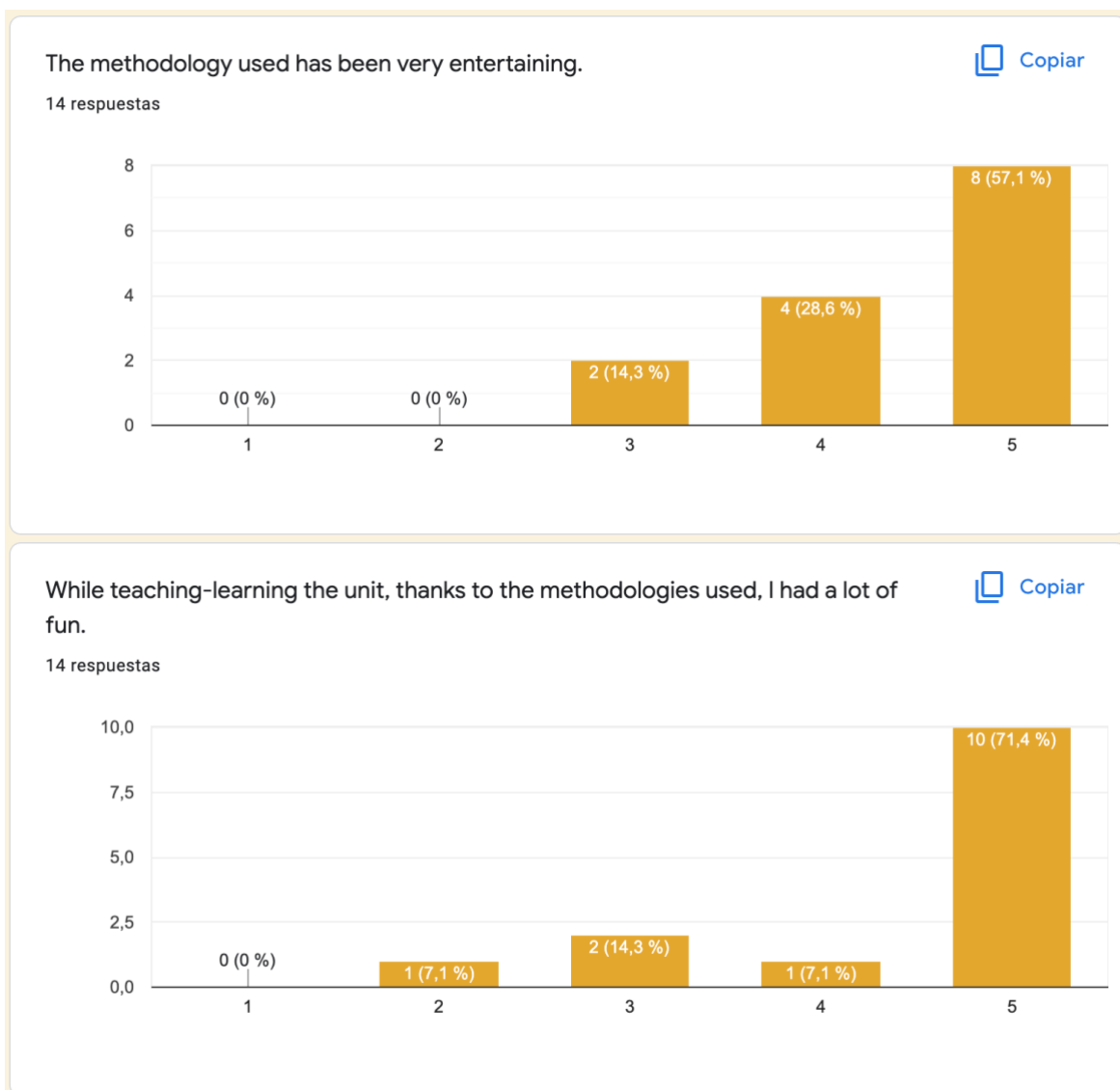


Graph 7. Variable "satisfaction" in the experimental group.

Therefore, regarding the analysis of the *satisfaction* variable, we can conclude that there are light differences between the control group and the experimental group. In other words, in terms of satisfaction, there are light differences between applying a traditional methodology and applying a SCM such as Flipped Classroom.

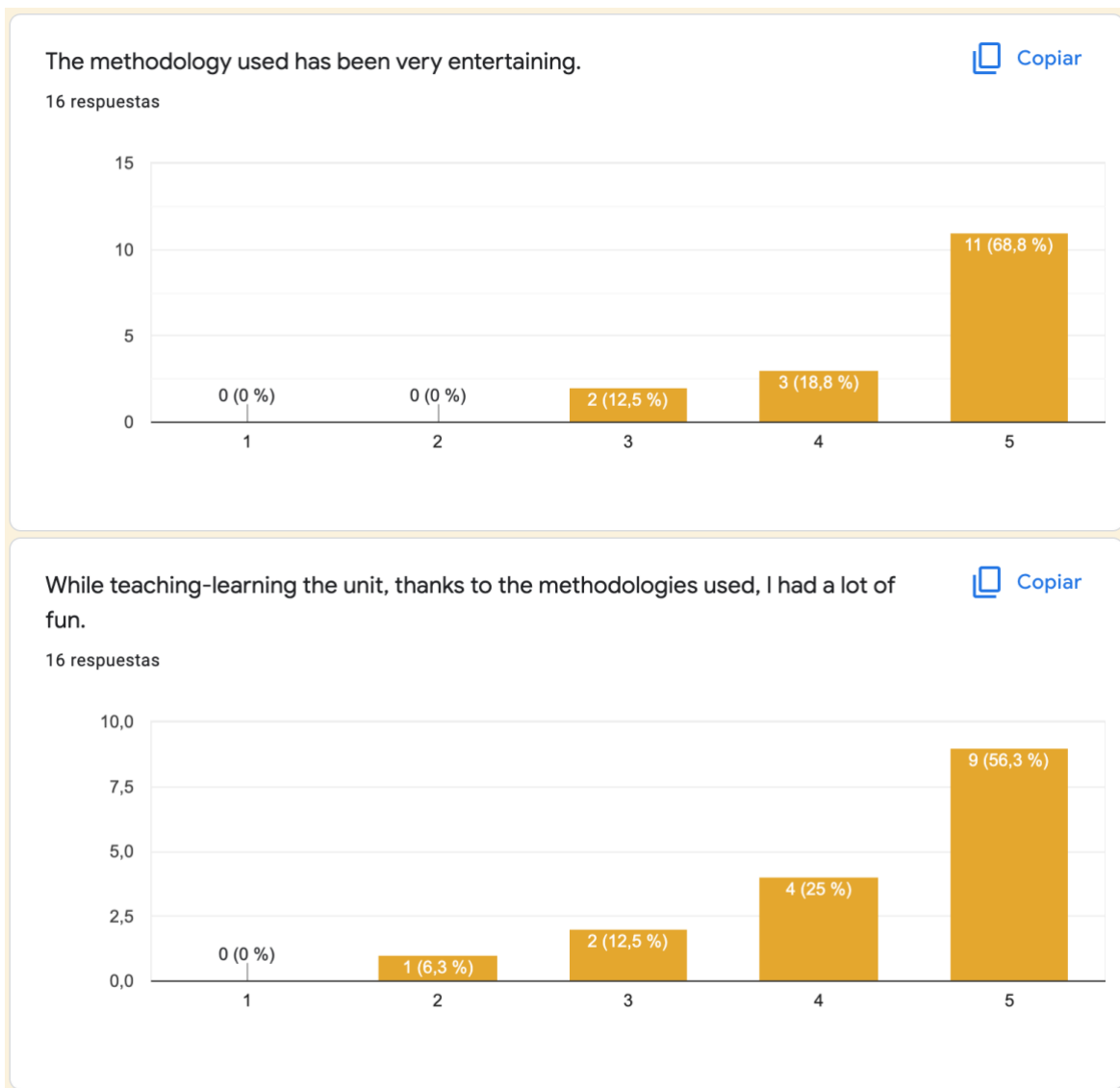
6.2.2. Boredom. Questions 3 and 4

In the control group, 80% of the group approximately voted that they completely agreed that the methodology applied was not boring. There were only several isolated responses indicating that it was not fun: 14% voted for item 3, 7% voted for item 2 (see Graph 8). Therefore, the majority thought it was fun (Mode = 5. Median = 5).



Graph 8. Variable "boredom" in the control group.

In the experimental group, 13-14 people voted that they agreed that they found the methodology fun (approximately 85%); only 2-3 answers below or equal to item 3 (see Graph 9, Mode = 5. Median = 5).

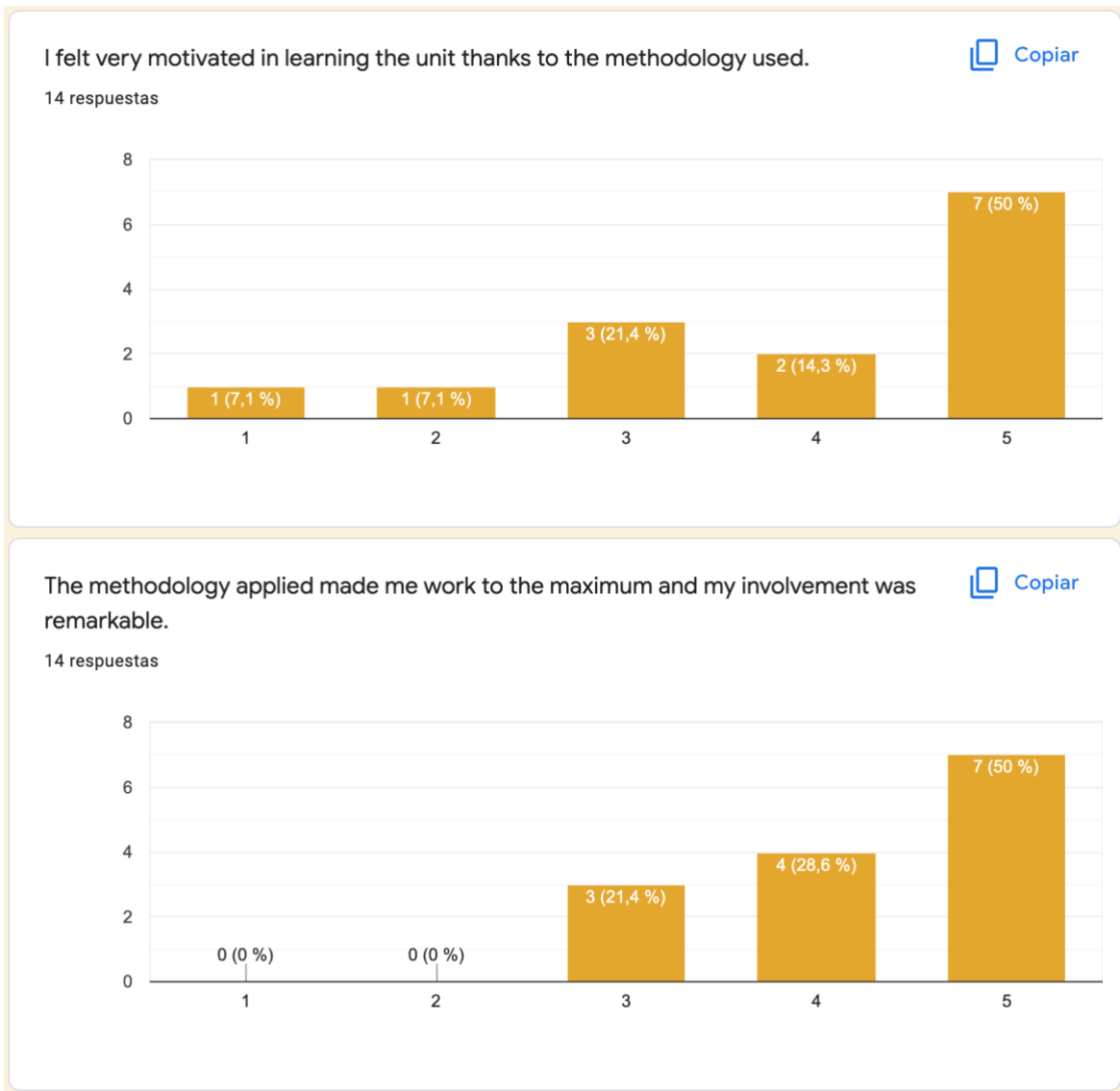


Graph 9. Variable "boredom" in the experimental group.

In summary: on this variable of *boredom* there are no significant differences between the two groups either.

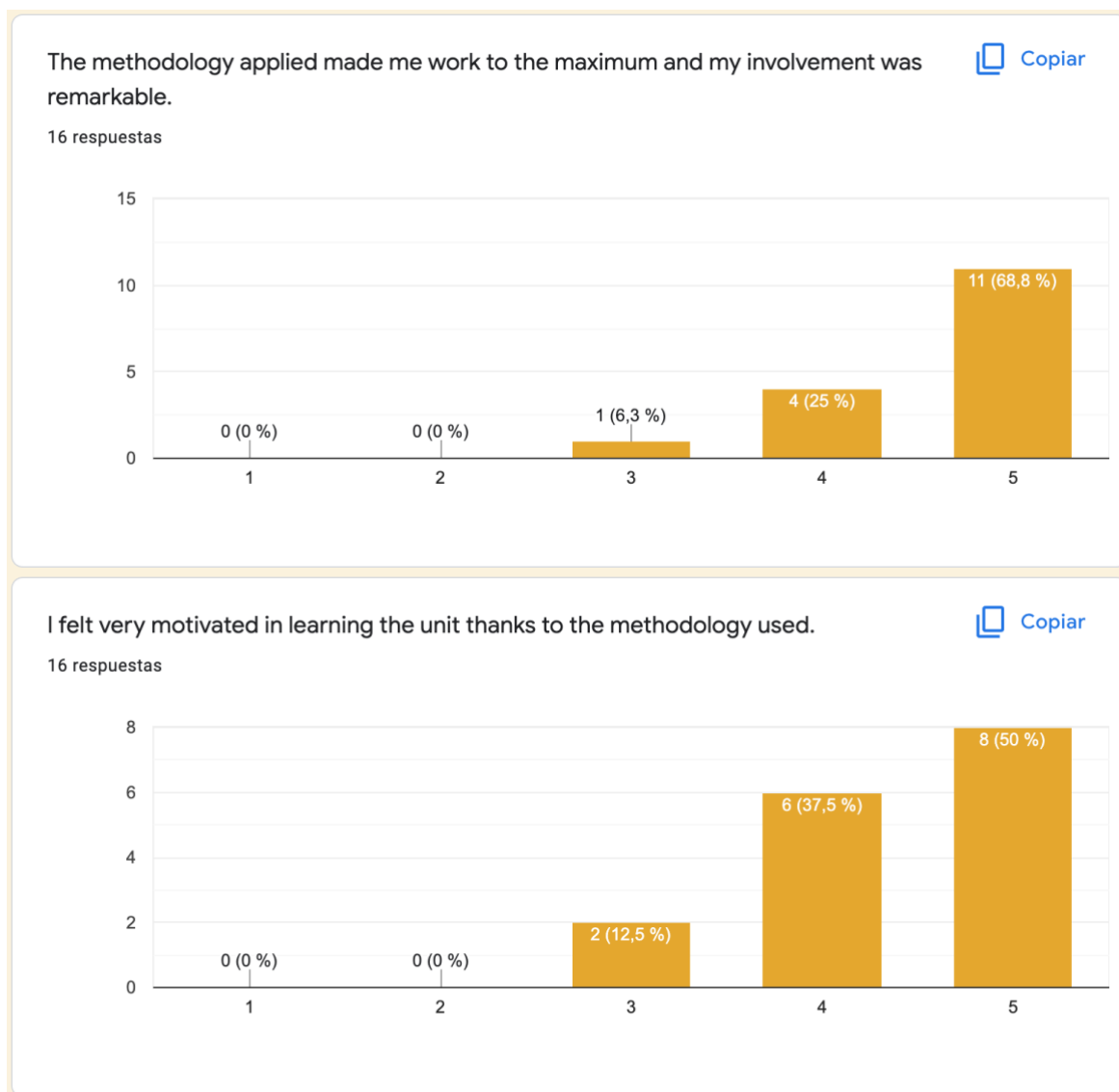
6.2.3. Motivation. Questions 5 and 6

On this variable, half of the control group marked the response associated with the highest motivation. Then their answers were mixed: 3 votes for item 3 (21.4%), and some single votes for items 1 and 2, which indicate dissatisfaction with motivation (see Graph 10, Mode = 5. Median = 4,5).



Graph 10. Variable "motivation" in the control group.

Different results were found in the experimental group: almost 90% of the respondents voted for the sub-maximum or maximum motivation. Only 10% voted for item 3 (see Graph 11, Mode = 5. Median = 5).



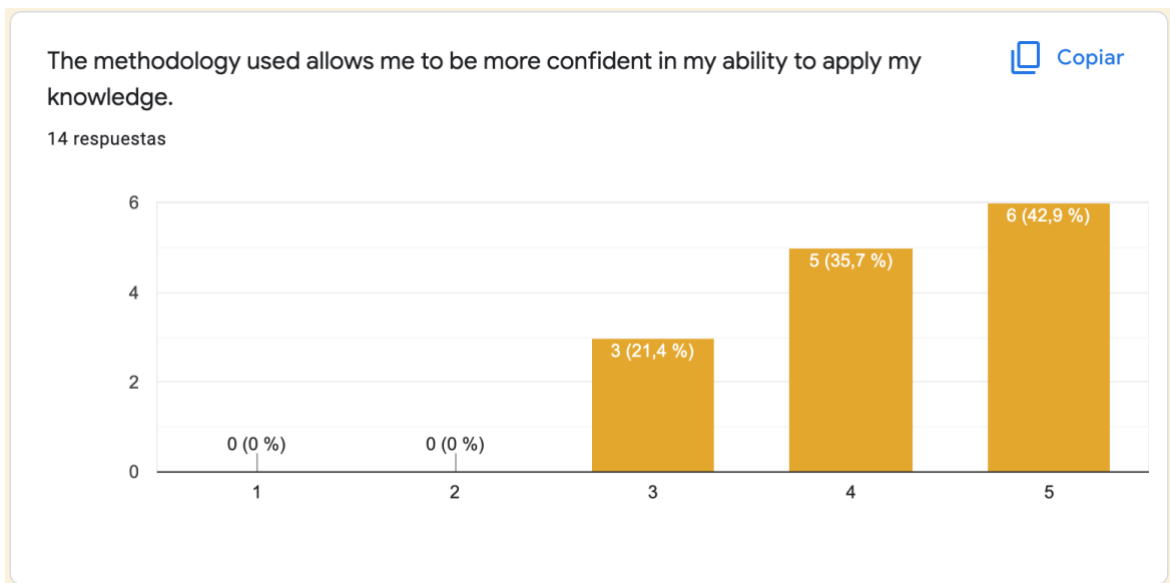
Graph 11. Variable "motivation" in the experimental group.

Therefore, in the *motivation* variable we did find significant differences: the group where the student-centred Flipclassroom methodology was applied reported higher motivation than the group where a traditional methodology was applied. This percentage was approximately 25% more students.

6.2.4. Confidence. Question 7

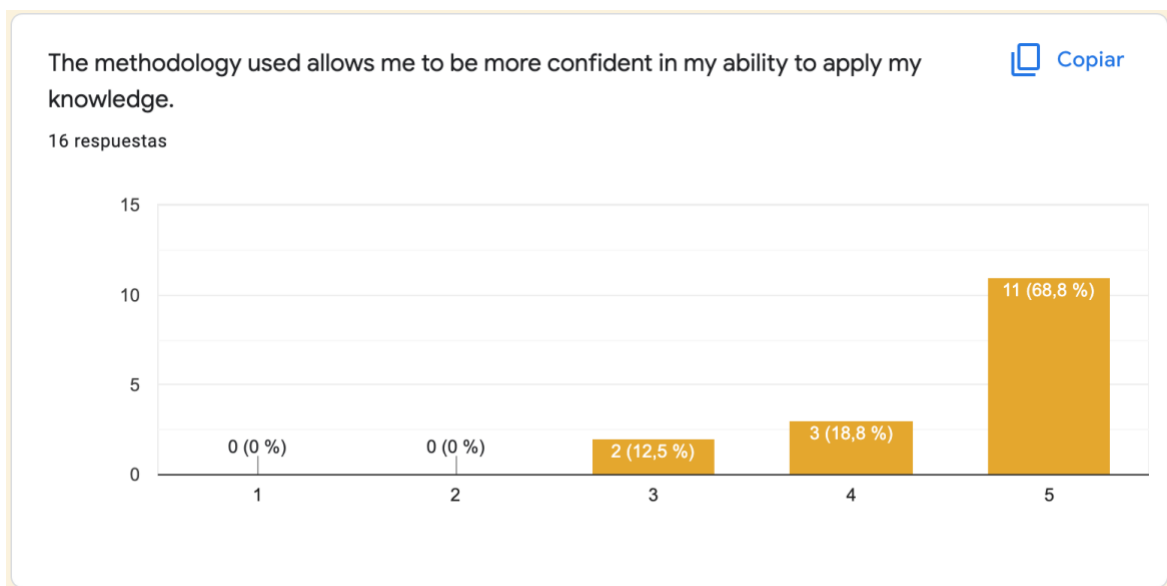
The variable *confidence* in the application of the knowledge learnt was assessed in both groups, with no significant differences, but some slight ones were found.

In the control group, almost 80% voted in favour of this statement (see Graph 12, Mode = 5. Median = 4).



Graph 12. Variable "confidence" in the control group.

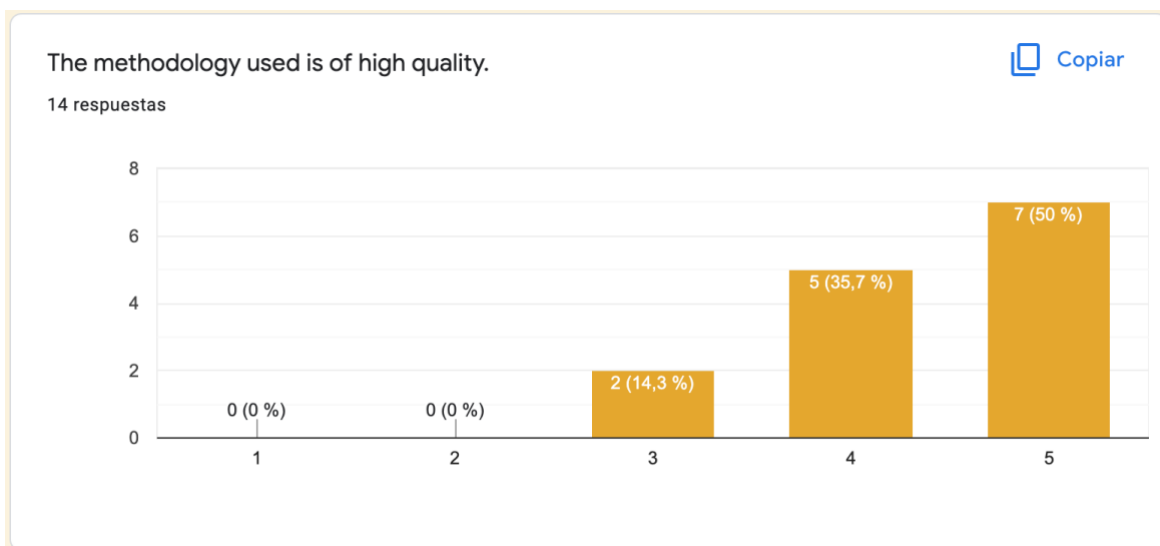
In the same vein were the votes of the experimental group, but with a 10% increase: almost 90% voted in favour of being more confident after the application of this methodology (see Graph 13, Mode = 5. Median = 5).



Graph 13. Variable "confidence" in the experimental group.

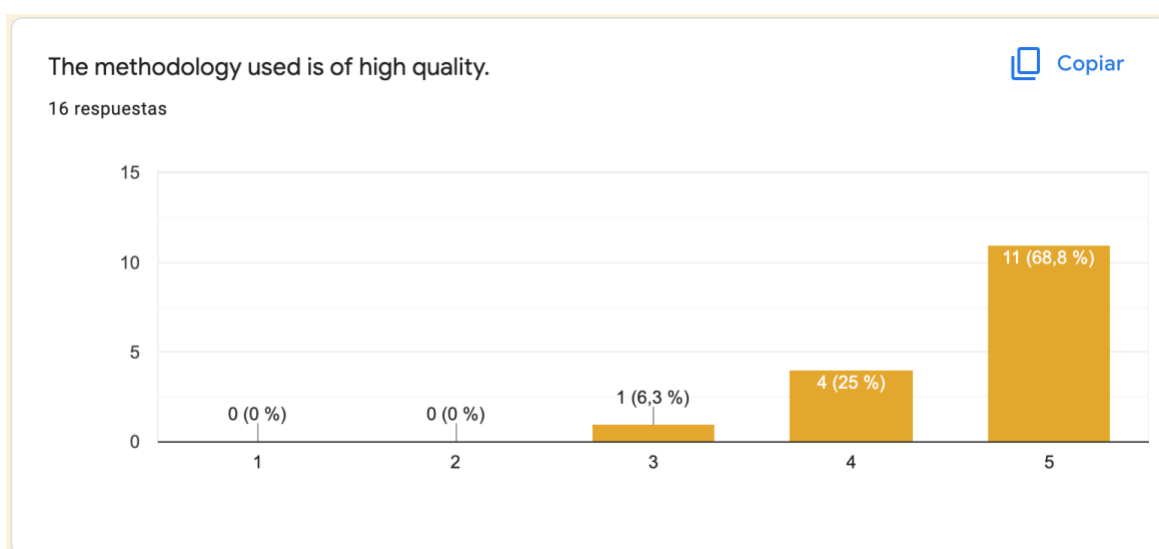
6.2.5. Quality. Question 8

In the control group, 85.7% of the students voted that the methodology was of quality, as compared to 14.3% who voted an item 3 to this question (see Graph 14, Mode = 5. Median = 4,5).



Graph 14. Variable "quality" in the control group.

In the experiment group, this positive percentage increases to 94% (almost 10% more), with only one vote for item 3 (see Graph 15, Mode = 5. Median = 5).



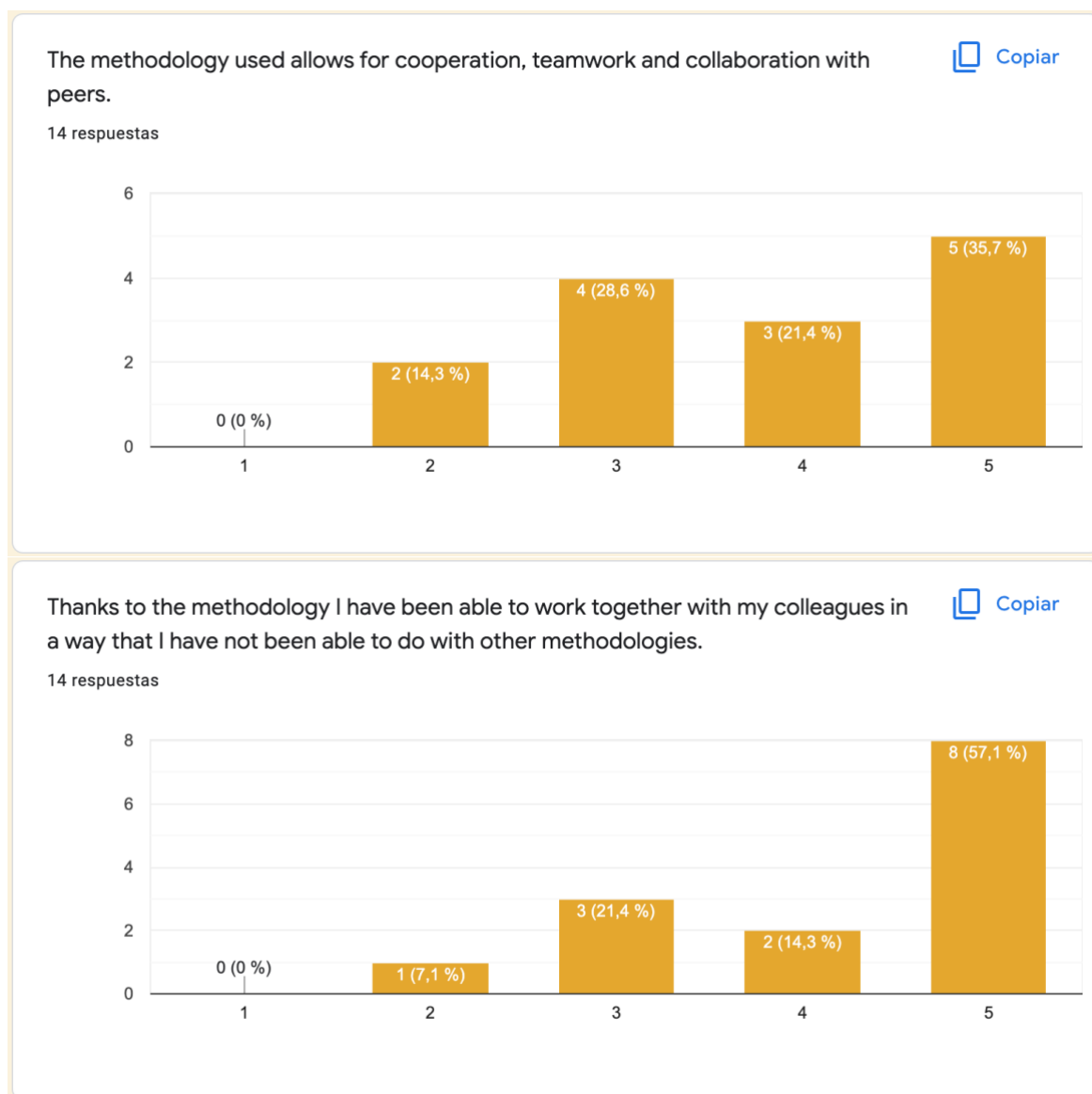
Graph 15. Variable "quality" in the experimental group.

Thus, we can draw slight differences in the *quality* of one methodology with the other, concluding that the Flipclassroom methodology is of slightly higher quality than the traditional one, always from the perspective of the students.

6.2.6. Cooperation. Questions 9 and 10

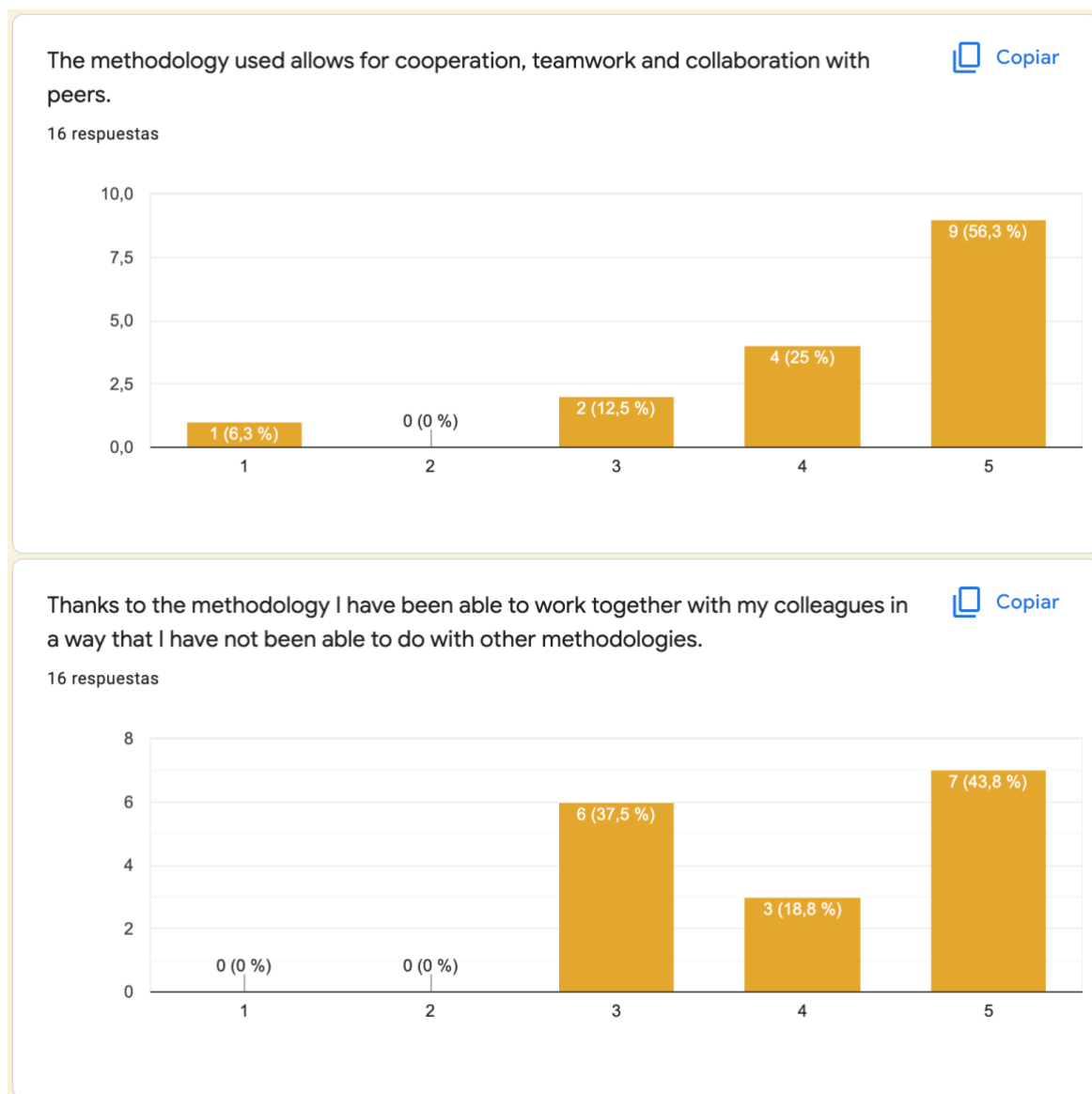
Analysing this variable, we observed that the control group gave a mixed response. Approximately 60% responded that the methodology allowed for *cooperation* with

peers, while 15% indicated that they disagreed. The rest (25%) gave an intermediate response (see Graph 16, Mode = 5. Median = 4).



Graph 16. Variable "cooperation" in the control group.

In the experimental group, the data obtained were as follows: approximately $\frac{3}{4}$ of the students responded that they were in favour of the statement. The rest neither agreed nor disagreed (see Graph 17, Mode = 5. Median = 4,5).

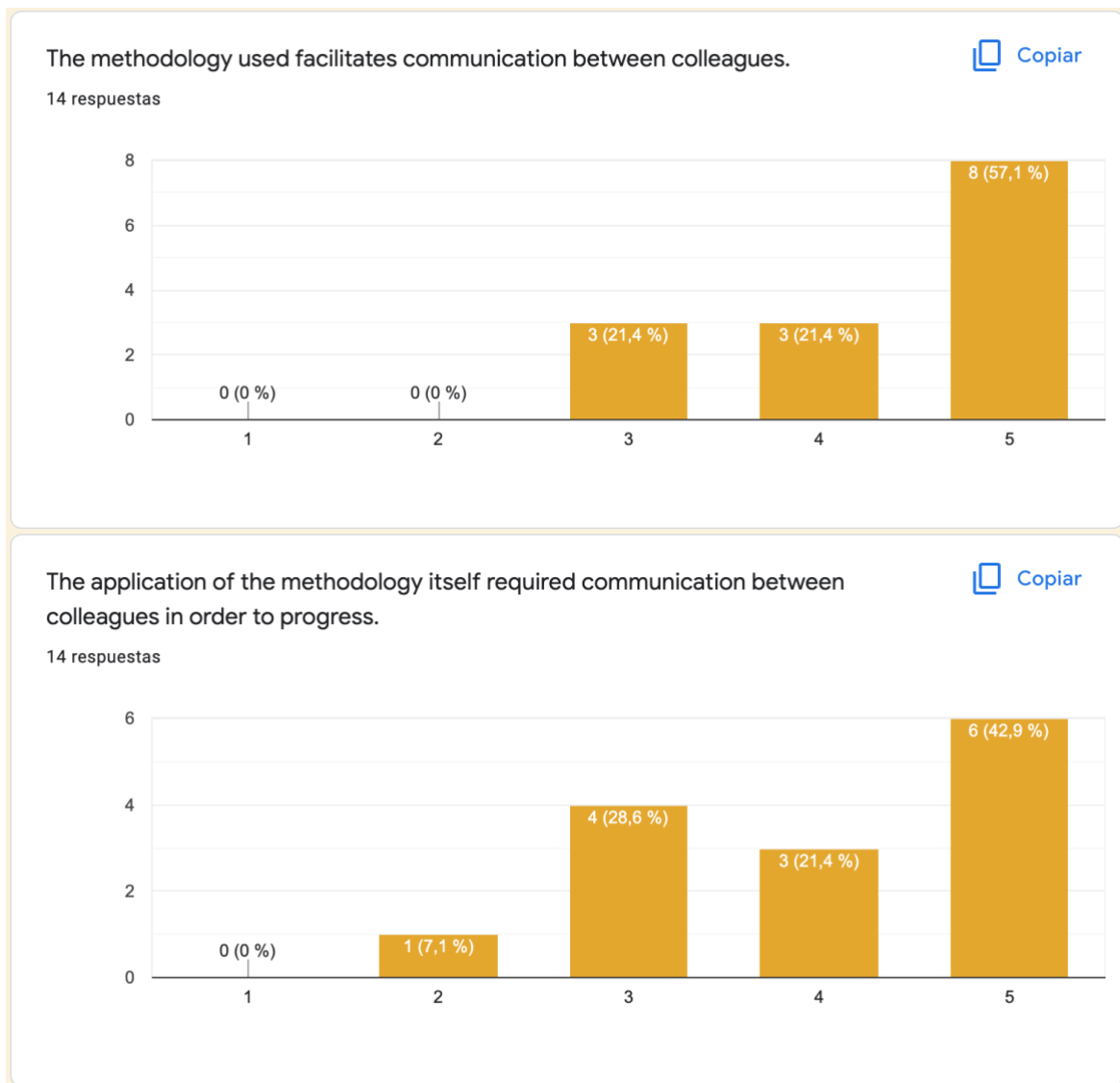


Graph 17. Variable "cooperation" in the experimental group.

Therefore, the experimental group indicated that their SCM allowed for greater *cooperation/collaboration*.

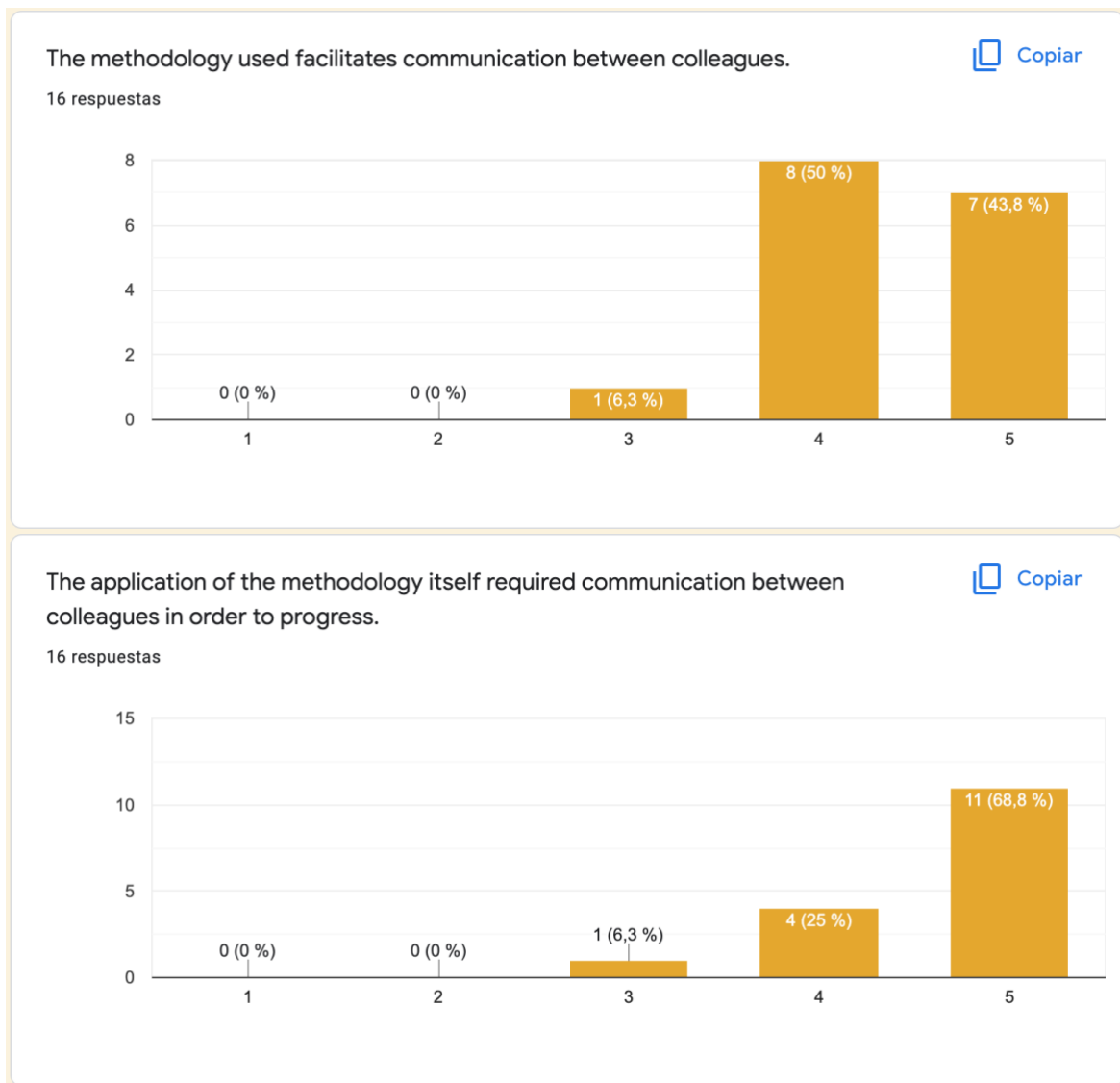
6.2.7. Communication. Questions 11 and 12

The majority of the control group (70%) agreed that the methodology facilitated *communication*, although some students voted in the middle (item 3). You can see Graph 18 (Mode = 5. Median = 4,5).



Graph 18. Variable "communication" in the control group.

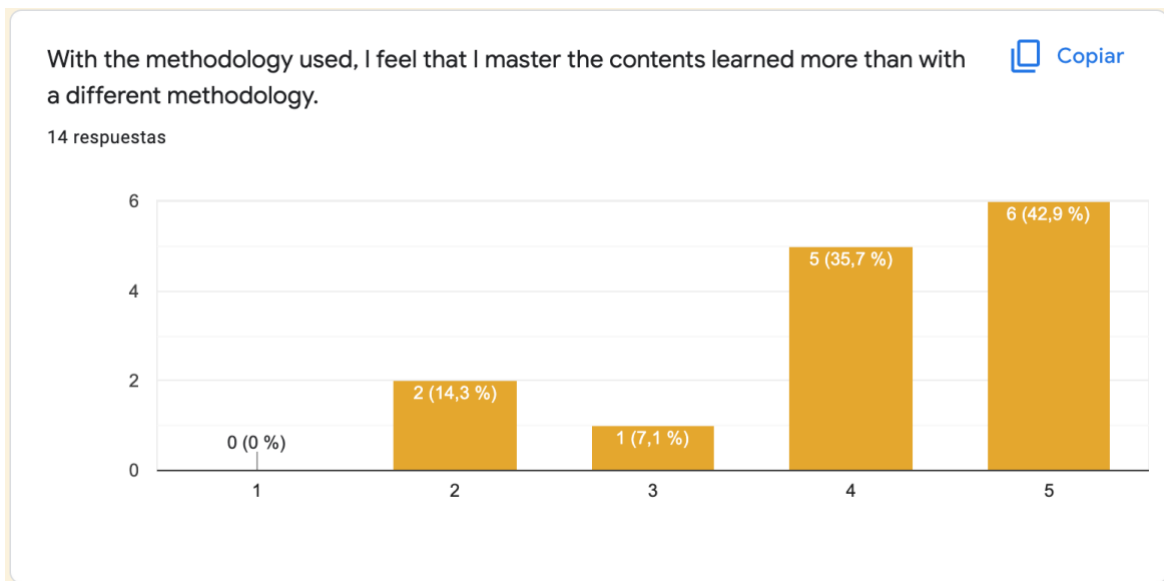
In the experimental group, the majority was absolute: 93.7% indicated that the methodology applied facilitated *communication* between peers (see Graph 19, Mode = 5. Median = 5). Therefore, the differences with the control group are significant.



Graph 19. Variable "communication" in the experimental group.

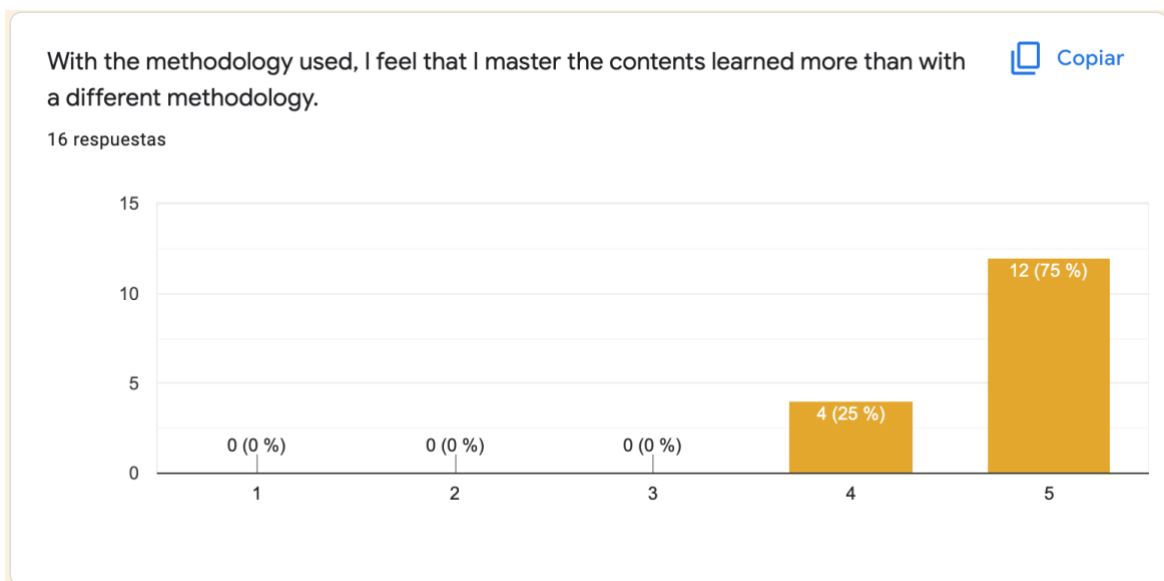
6.2.8. Mastery of learning. Question 13

In terms of *learning mastery*, only 22% of the control group voted against or abstained on whether the methodology made them more proficient in the content learned (see Graph 20, Mode = 5. Median = 4).



Graph 20. Variable "mastery of learning" in the control group.

The differences with the experimental group were abysmal: 16 students out of 16 voted in favour of this statement, the 100% (see Graph 21, Mode = 5. Median = 5). Therefore, the students who learned under the Flipped Classroom methodology felt more in command of the content and language learned.

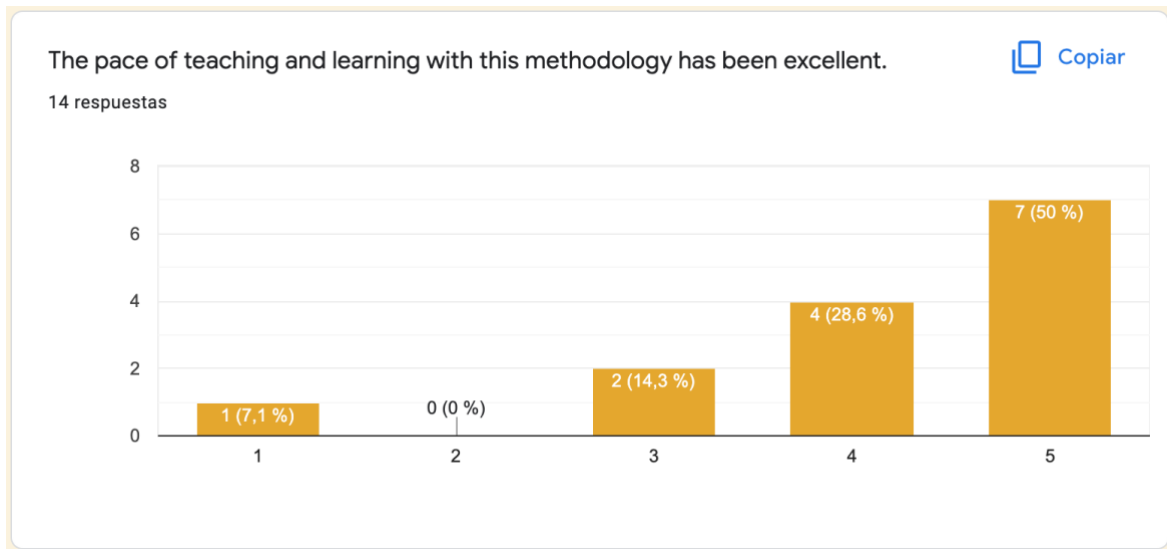


Graph 21. Variable "mastery of learning" in the experimental group.

Therefore, an obvious conclusion is drawn: SCM such as the Flipped Classroom technique is (100%) effective in the students' own feeling of mastering the content learnt in the lesson.

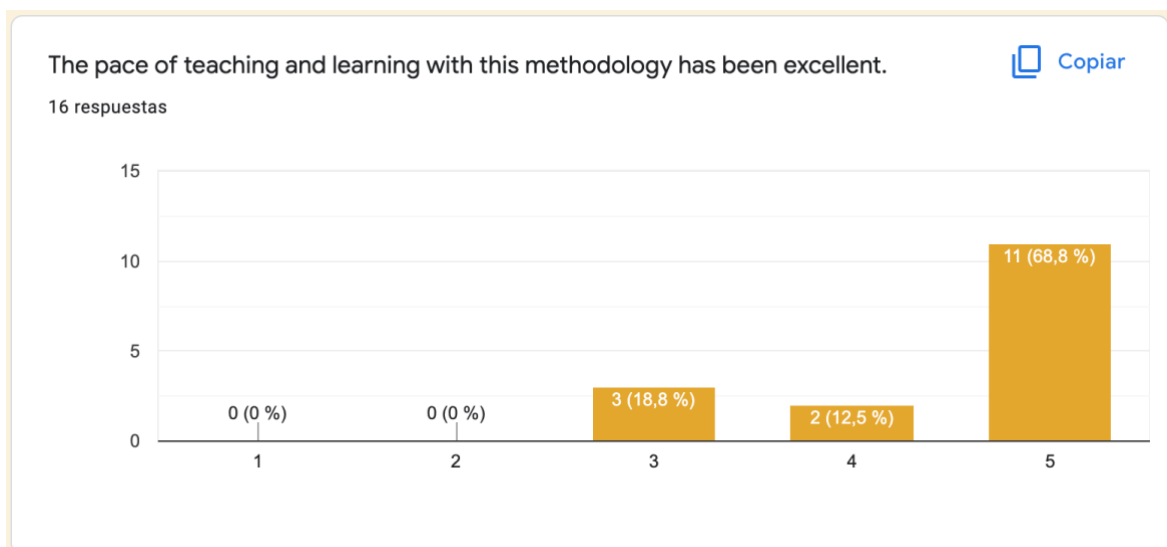
6.2.9. Pacing. Question 14

On this variable, approximately 80% of the control group voted in favour of the following statement: the *pace* of the class had been adequate. Some 13% voted neither for nor against, and 7% voted totally against (see Graph 22, Mode = 5. Median = 4,5).



Graph 22. Variable "pacing" in the control group.

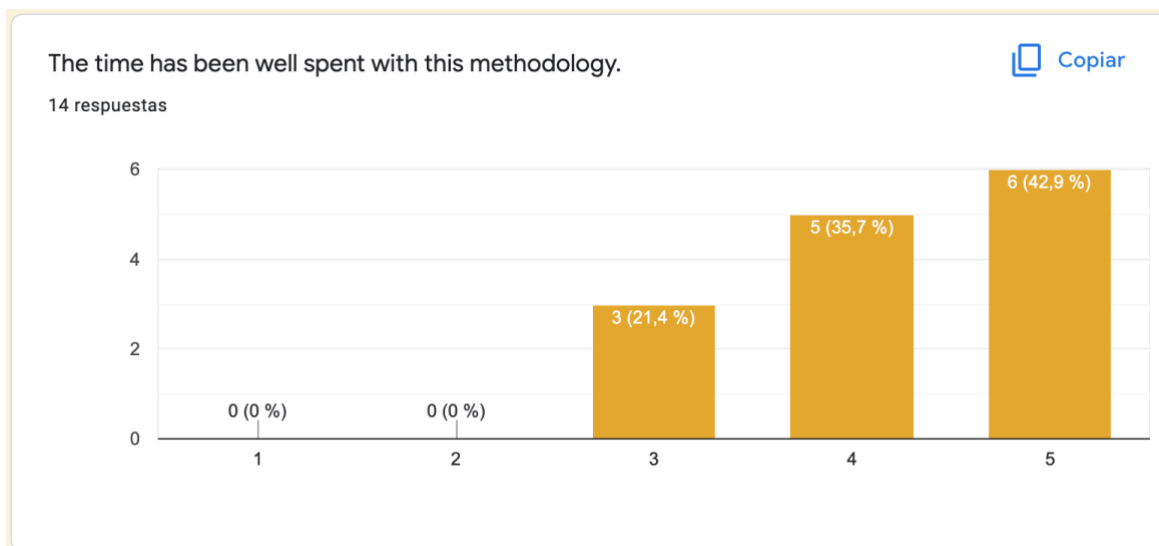
Similar results were found in the experimental group. 81.3% voted in favour, while the rest voted moderately (see Graph 23, Mode = 5. Median = 5). No obvious conclusions can be drawn.



Graph 23. Variable "pacing" in the experimental group.

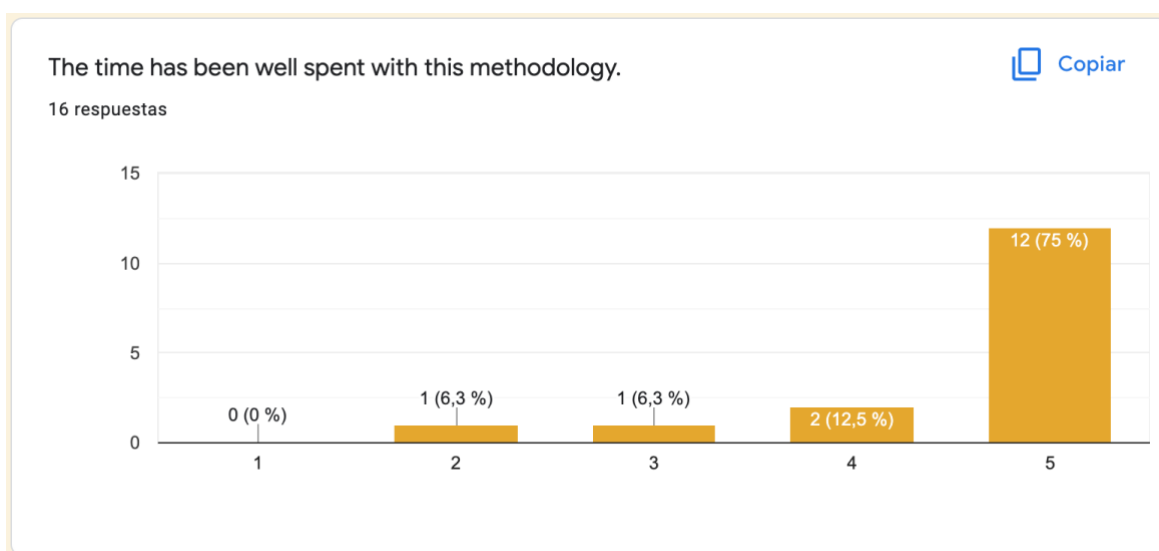
6.2.10. Time used. Question 15

Almost 80% of the control group indicated that the *time* had been well spent under this methodology (see Graph 24, Mode = 5. Median = 4).



Graph 24. Variable "time used" in the control group.

On the other hand, 87.5% of the experimental group stated the same (see Graph 25, Mode = 5. Median = 5). Thus, there is a small difference in favour of the SCM.

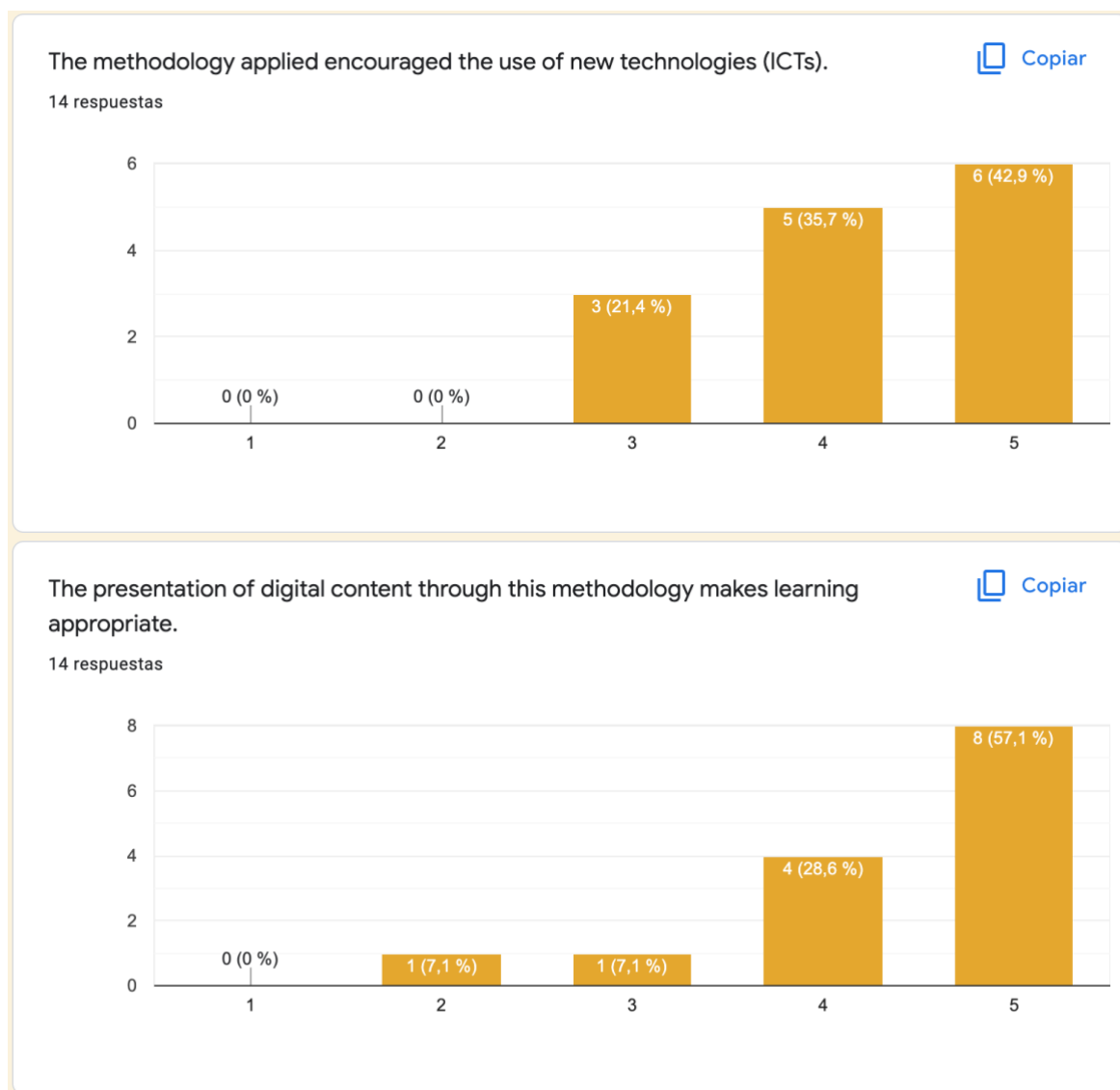


Graph 25. Variable "time used" in the experimental group.

6.2.11. Use of ICTs. Questions 16 and 17

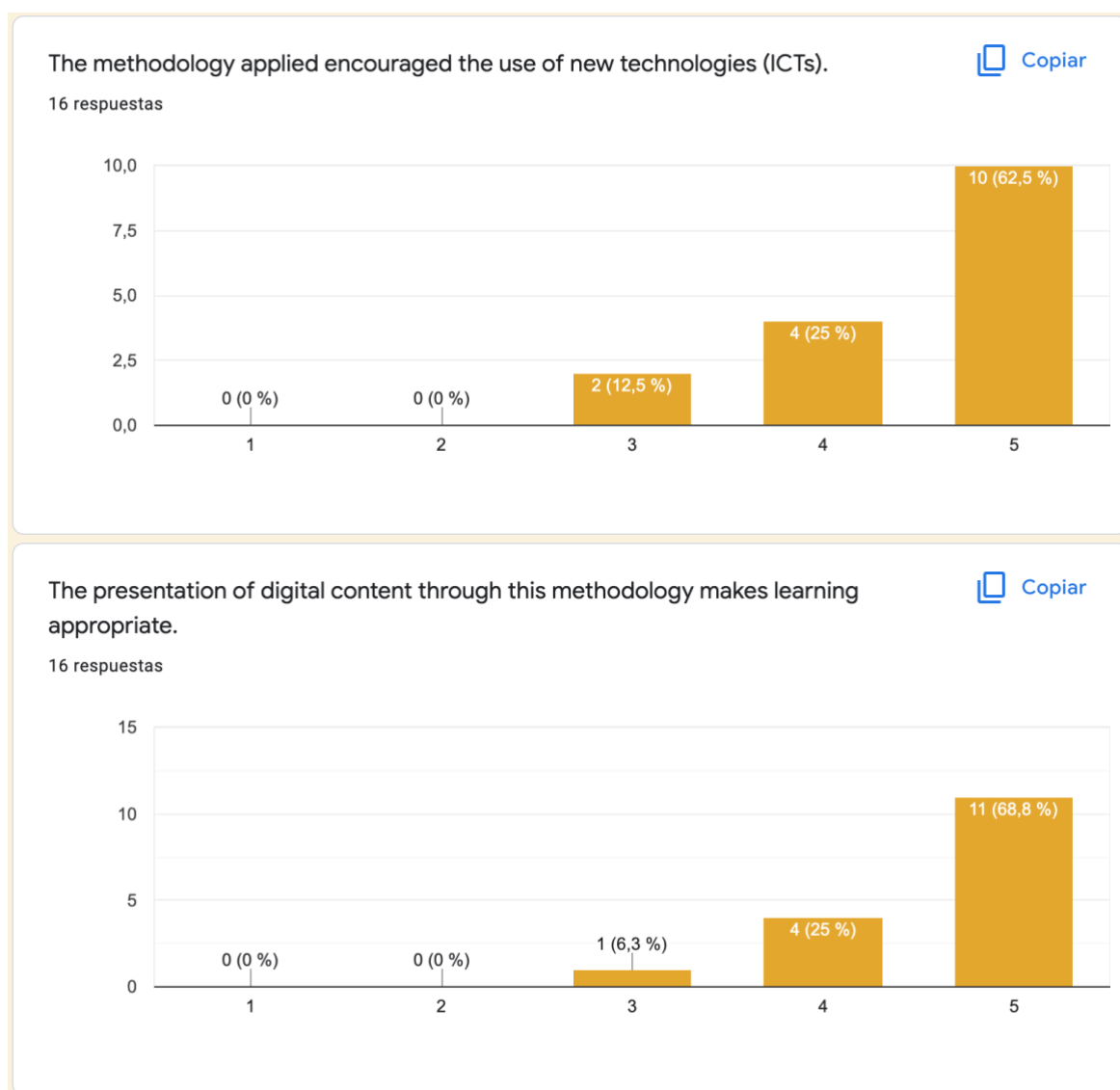
Finally, we are going to analyse the students' responses regarding the use of ICT under both methodologies. Firstly, 80-85% of the control group, where a traditional

methodology was used, indicated that the methodology encouraged the use of ICT (see Graph 26, Mode = 5. Median = 4).



Graph 26. Variable "use of ICTs" in the control group.

In the experimental group, only 10% gave an intermediate answer (item 3). The rest voted for items 4 and 5, so their response was that the methodology promoted the use of new technologies (90% of votes, with 65% voting for the maximum). You can see it graphically represented in Graph 27 (Mode = 5. Median = 5).



Graph 27. Variable "use of ICTs" in the experimental group.

Looking at the responses between the two groups, we find similar conclusions: both methodologies promote the *use of ICT* equally, being slightly higher in the Flipped Classroom methodology.

6.2.12. Open-ended questions. Questions 18, 19 and 20

The last three questions were open-ended, asking the students' personal opinion on certain aspects. In this way a subjective analysis of their perception could be made. These are briefly analysed below.

- Question 18 was: *What are the ADVANTAGES and DISADVANTAGES of the methodology applied?*

Most of the control group agreed: they had learned the content well, they paid more attention, and it had been very efficient. However, the main disadvantages were that they could not go out in the playground, there was little interaction, and there was little practice.

The responses of the experimental group were different: among the advantages, “easy to understand content, learning in a more fun and enjoyable way, you learn more content, it is very interactive, the classes are more didactic and less boring”. As for the disadvantages, “not having access to the internet, not being able to work in pairs, and that someone does not watch the videos and therefore does not learn”.

- Question 19 was: *Would the methodology be useful for other subjects? Why or why not?*

In the control group, the students responded as follows: “the methodology used was appropriate for other subjects, being enjoyable, learning the content well, and providing digital content to be able to study it”.

In the experimental group the answers were: “it is appropriate for the use of new technologies, for being able to see the explanation as many times as you want, for being very entertaining and didactic, to improve the traditional theoretical explanation of some teachers, and it would be useful for other subjects, as they ask you questions while you explain and so it is easier to stay with the contents”. Some responded that “it would not be applicable to other subjects, but in PE it would be good”.

- And finally, question 20 was: *What improvements would you recommend to improve learning in the methodology applied?*

The majority of the control group answered: “adding more videos and photos, doing some practice, being careful because if the content is not appropriate it can be boring, it could be more interactive and more enjoyable...”.

Against this, the experimental group responded: “more practical tasks, videos that do not contain so many questions, etc.”, although the majority said they did not need any improvement.

7. CONCLUSIONS

7.1. A sort of rounding-off

Considering the problems that usually exist in bilingual PE, where we find difficulties in teaching and learning theoretical content (as important as practical content), the aim of this Dissertation has been to investigate different teaching and learning methodologies in search of a student-centred approach, which would allow teaching the content in a better way than other more traditional methodologies.

Therefore, and after reviewing the scientific literature, a didactic intervention has been proposed with students in a secondary school, within the PE classroom. Two groups have been involved: a control group, applying a traditional methodology based on theoretical presentations by teachers; and an experimental group, using SCM (Flipped Classroom techniques).

After this, the results obtained in both groups have been analysed and compared in terms of two aspects: content and language learning in a CLIL context (1), and students' subjective perception of the applied methodology (and 2). The results obtained show better results in both aspects for the experimental group.

Therefore, it can be determined that a SCM such as Flipped Classroom is more effective in teaching-learning theoretical content in PE-in-CLIL, as well as in the students' perception of it.

7.2. Main findings

As has been developed throughout this Master's Dissertation, the aim was to write up conclusions and main findings about applying a learner-centred methodology in the PE classroom to teach and learn theoretical content in a CLIL context. This experiment would be compared with another traditional methodology applied in another group, and to see the differences in two aspects between the two groups: the learning of CLIL content and languages in PE (1), and the students' perception of the applied methodology (and 2).

- In relation to CLIL content and language learning, both groups acquired learning gains after applying the corresponding methodologies. However, it

can be concluded that the students who received the lessons through a SCM (in this case, Flipped Classroom techniques) obtained higher scores in the PE content and language test. Specifically, 58.54% better results. In other words, the application of a SCM is more beneficial for the learning of content and theoretical languages of PE as compared to a more traditional methodology.

- In relation to the students' perception of the applied methodology, different results were found, depending on the variable analysed.
 - First, we found no significant differences in the variables *boredom*, *pace* or *time used*. In both groups the students responded similarly: approximately 80% of each group felt that their methodology was not boring, they managed the pace and the time used well.
 - Second, slight differences (not enough to be significant, but noteworthy) were found in the variables *satisfaction*, *confidence*, *quality* and *ICT use*.
 - The group with the Flipped Classroom methodology highlighted that they felt 15% more satisfied.
 - This same group outperformed by 10% in terms of overall confidence felt, with the differences being higher for maximum confidence (+30%).
 - The SCM group said that their methodology was 10% better quality than the other group. However, the difference in the response to item 5 (highest quality) was 20%.
 - Finally, in terms of ICT use, the experimental group outperformed the control group by 10%. Therefore, the use of ICT is slightly more common in the Flipped Classroom methodology.
 - Third, significant differences were found between the two groups in several survey variables: *motivation*, *cooperation*, *communication*, and *mastery of learning*.
 - In terms of motivation, the SCM group reported that their methodology was 25% more motivating than the traditional methodology group.

- In terms of cooperation, there was 15% more cooperation with the Flipped Classroom methodology. However, none of the students in this group voted against cooperation, which was the case with the traditional methodology.
- Also, 25% more of the experimental group indicated that their methodology was more conducive to peer-to-peer communication than the traditional methodology.
- Finally, 100% of the SCM group felt that they mastered the content after the methodology was applied: 25% more than the group with the traditional methodology.

7.3. My contribution

In my opinion, I think I have been able to contribute a few things to the field of research in Physical Education and its teaching and learning methods. To analyse my contribution, we can recapitulate the research questions we posed at the beginning:

- What types of SCM exist for PE? And for bilingual PE? What about for teaching theoretical content in bilingual PE?

In the course of the study we have analysed the literature and discovered methodologies applicable to the teaching and learning of theoretical content in the context of CLIL, as well as to the teaching and learning of theoretical content.

- Which one is better? Which is the most effective to teach-learn theoretical content in PE?

The most effective ones tend to be active, competency-based and SCM, such as Flipped Classroom, cooperative learning, use of ICTs... In the case of my intervention, a SCM such as the Flipped Classroom has been compared with a more traditional methodology, such as the oral presentation of content in the classroom.

- What are the differences between them and traditional ones?

After the practical application of the intervention, it has become evident that SCMs produce more content and language learning than traditional methodologies. Likewise,

the students' subjective perception of the applied methodology is more favourable in the group where the innovative methodology was implemented.

- How can they be well implemented in a didactic proposal in a school?

We have shown that a real, applicable and feasible didactic proposal can be developed in the context of the PE and CLIL. In fact, it has been carried out successfully and the expected results have been obtained.

- What effects will the didactic application have on what students learn?

It has been shown that SCMs are more effective in CLIL content and language acquisition in PE, as well as in the perceived satisfaction of learners with the applied methodology, as opposed to a more traditional methodology.

7.4. Limitations

On the other hand, we have faced some limitations:

- Firstly, not as much of the population sample (students) participated as I would have liked. Due to several factors (requirements to belong to the follow-up group, absence due to illness, holiday periods...), the total sample population has been reduced by half, so the results of this research are not as valid and reliable as they could have been.
- Likewise, all the research is focused on a single school in a single locality, so depending on the geographical context, the results may be different.
- The tools and techniques for data analysis and for establishing the validity and reliability of the research (methodology) have not been the best. A questionnaire and a survey have been developed based on other valid and reliable research in the scientific literature, but those of this research have not been subjected to an exhaustive validity and reliability procedure. Therefore, the conclusions have to be interpreted with caution.
- The students' own response in the questionnaires and the survey may be a detrimental factor to the research results. For example, if the learner has not been truthful in answering, has answered randomly, etc. This is difficult to control, but it could be a possible limitation.

- The time available to prepare and implement the intervention, as well as to analyse results, is a constraint. I had several months. Perhaps with more time a better research could have been prepared. Moreover, it is a cross-sectional study. If it were longitudinal, the validity of the results would be higher.
- The degree of depth of the bibliographical review of this research may also imply a limitation. However, the literature search could be further refined by using more precise search terms.

7.5. Lines for further research

This project can be improved, and further research is needed to draw more decisive conclusions. Other possible lines of research could include:

- Research can be carried out in search of other SCM alternatives to the Flipped Classroom, where the differences with a traditional methodology are more superior and significant, both in the learning of content and in the students' own subjective perception.
- It is also possible to analyse and compare methodologies: the time of motor practice allowed through one methodology and the other during the hour of PE class. For example, it will not be the same to use a PE session to teach theoretical content in the classroom, than to post videos in the virtual classroom, to watch them at home, and to use the PE hour for motor practice.
- If we focus on the Flipped Classroom methodology, it could also be interesting to analyse which flipped classroom model is the most effective and most appropriate for bilingual PE, with the objective of maximum student learning, or even the previous objective: maximum motor practice time.
- In the same way, if we use a methodology where video recording is important, "how" to record videos and make them entertaining, didactic, and interactive, can become a very interesting future line of research.
- Another line of research related to this MA Dissertation could be a more comprehensive analysis of the specific effects of the applied methodology on the components of CLIL. For example, there will not be the same positive effects on CLIL if group work or individual work is done during the lesson. Or whether ICT is used or not.

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9. APPENDICES

9.1. Appendix 1. Assessment tests

- Pre-test: <https://forms.gle/NZ8HXJ54yrPrqKZ69>
- Post-test: <https://forms.gle/JQ3JwGd4vH9sR7ek8>

9.2. Appendix 2. Subjective perception survey

- Perception survey: <https://forms.gle/kZWzhZZQNsmBHPYo8>

9.3. Appendix 3. Edpuzzle learning-teaching platform

The image shows two screenshots of the Edpuzzle platform. The top screenshot displays the 'Experimental group CLIL' dashboard. It features a sidebar with navigation options like 'Discover', 'My Content', 'My Network', and 'Notifications'. The main area shows a list of assignments under the 'In progress' tab. The assignments are:

Assignment	Start date	Due date	Turned in
Video Topic 3 Orienteering	June 1st	June 6th	17 of 23
Video Topic 2 Hiking	June 1st	June 6th	17 of 23
Video Topic 1 PANE	June 1st	June 6th	19 of 23

The bottom screenshot shows the video player for 'Video Topic 1 PANE'. The video is titled 'PHYSICAL ACTIVITIES IN THE NATURAL ENVIRONMENT' by Don Bosco High School. The player includes a progress bar, a video player, and a sidebar with 'Video Events' listed as follows:

- 00:27 Open-ended
- 01:01 Multiple-choice
- 01:28 Multiple-choice
- 02:15 Multiple-choice
- 02:36 Multiple-choice
- 03:13 Multiple-choice
- 03:40 Multiple-choice
- 04:03 Open-ended

9.4. Appendix 4. Mini-tasks for the Experimental Group (EG)

Student name: _____ Topic 1: PANE Mini-task 1 Using the Internet, research 3 PANE, explain briefly what it is and detail the materials needed to practice it. PANE n°1: _____ What is it? _____ Materials: _____ • • • • • • • • PANE n°2: _____ What is it? _____ Materials: _____ • • • • • • • •	Student name: _____ Topic 2: Hiking Mini-task 2 Using the Internet and a website to buy hiking materials and clothing (Decathlon, Sprinter...), make a shopping basket with the necessary materials to carry out a proper hiking route in your environment. Take into account the weather, the length of the trails in your area, the onion theory (choose a garment for each layer), backpack, materials... When you have made your basket, attach a screenshot so I can see if it is appropriate or not. Don't buy anything without the consent of your parents.) Screenshot	Student name: _____ Topic 3: Orienteering Mini-task 3 Search on the Internet about a compass. Then, name the different parts of the compass marked with an arrow.  Answer the following questions about Orienteering What does the blue triangle on the orienteering map mean?  What does the blue double circle on the orienteering map mean?  How would you describe the control point of the orienteering races (colour, size, shape...)?
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9.5. Appendix 5. Final task for the Experimental Group (EG)

Student name:

Topic 1, 2 and 3

Final task

Valverde del Camino is surrounded by a privileged natural environment. As you already know, there are numerous trails, or mountain bike routes, or even motorbike routes, through which we can enjoy nature while practicing physical activity. For this reason, grouped in teams of 5 and working cooperatively, in this Final Assignment you have to:

- Research on the internet and find an approved map and guide of a route of Valverde del Camino.
- Download them to your computer, tablet, or mobile phone.
- Analyse it appropriately, describing:
 - Total distance
 - Start and finish
 - Route duration
 - Difficulty
 - Architectural elements of interest that it passes through
 - Description of the route (summary)
- Do a personal reflection on it (if you have done it)

9.6. Appendix 6. Worksheets for the Control Group (CG)

Student name:	Topic 1: PANE	Topic 2: Hiking	Topic 3: Orienteering
Sheet 1 What are Physical Activities in the Natural Environment? Name 5 characteristics of PANE: • _____ • _____ • _____ • _____ • _____ In which area of the mountain is it possible to go skiing? Why? Name 5 PANE practised in the water: • _____ • _____ • _____ • _____ • _____ What is this air sport called? 	Sheet 2 How would you define hiking? What is? Circle the basic skill that is worked on through it: Run Walk Jump Fly Sprint Describes the main differences between the 3 types of approved trails in hiking. Indicate 5 tips for progression in hiking: • _____ • _____ • _____ • _____ • _____ Explains the "onion theory" when dressing for hiking.	Sheet 3 How would you define Orienteering? What is? True or False: - It appears in Scandinavian countries → _____ - Sport competitions were celebrated → _____ - Martin Kopelud was the propeller in Spain in 2005 → _____ - The first map of Spain was realised on the Casa de Campo → _____ Indicate the 5 most important elements of orienteering: • _____ • _____ • _____ • _____ • _____ Explain briefly what each of the colours is used for on the orienteering map. Mark the compass parts: 	